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Vol. 6 January 1955 No. 1

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

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***EDITORIAL OFFICE:** Washington, D. C. **P.O. ADDRESS:** Box 1736, Washington 13, D. C. Telephone: REpublic 7–6278.

ADMINISTRATIVE OFFICE: American Meteorological Society, Office of Executive Secretary, 3 Joy Street, Boston 8, Mass.

* Address all business communications, orders and inquiries to the Executive Secretary, Mr. Kenneth C. Spengler, 3 Joy Street, Boston 8, Mass. Exchanges and reprints may be sent direct to P. O. Box 1736, Washington 13, D. C.

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY is a monthly publication devoted to:

A. Current Abstracts in English on important meteorological literature in every language.

B. Bibliographic references to other items of interest to the profession.

C. Selective, annotated bibliographies on subjects of immediate and special interest to meteorologists.

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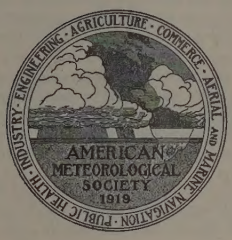
METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 6 JANUARY, 1955 No. 1


AGRICULTURE · COMMERCE · AERIAL AND MARINE NAVIGATION · PUBLIC HEALTH · INDUSTRY · ENGINEERING
AMERICAN METEOROLOGICAL SOCIETY
1919

SPECIAL FEATURE IN THIS ISSUE

A Selective Annotated Bibliography of Bibliographies on Meteorology

by

MALCOLM RIGBY AND DOROTHY M. GROPP

(For complete table of contents see back cover)

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It seems to me that men do not rightly understand either their store or their strength, but overrate the one and underrate the other. Hence it follows, that either from an extravagant estimate of the value of the arts which they possess, they seek no further; or else from too mean an estimate of their own powers, they spend their strength in small matters and never put it fairly to the trial in those which go to the main. For let a man look carefully into all that variety of books with which the arts and sciences abound, he will find everywhere endless repetitions of the same thing, varying in the method of treatment, but not new in substance, insomuch that the whole stock, numerous as it appears at first view, proves on examination to be but scanty.

. . . In what is now done in the matter of science there is only a whirling round about, and perpetual agitation, ending where it began. . . . For better it is to make a beginning of that which may lead to something, than to engage in a perpetual struggle and pursuit in courses which have no exit.

FRANCIS LORD BACON, **"The Great Instauration,"** 1605–1620.

EDITORIAL

It is easy for us today, with the perspective gained by three centuries of progress in science, to see that FRANCIS BACON was right—in fact almost prophetic for in 1620 there were only a few hundred scientific works which concerned meteorology, and many of them were repetitions of or commentaries on ARISTOTLE's writings. The great discoveries which make science what it is today were as yet undreamed of. The barometer, thermometer, hygrometer, anemometer and pyrheliometer had not yet been invented; the stratosphere, ionosphere and ozonosphere were unheard of; the nature of lightning and the aurora, of storms and hurricanes and convective action in cloud formation were unsuspected and the elaborate synoptic networks, telecommunication and teletransmission, airplane reconnaissance, transosondes, radiosondes, radar and rockets, and electronic or digital computers had not yet been placed at the disposal of research workers and forecasters.

Yet with all the vast store of knowledge and technology (with 250,000 or 300,000 articles and books which has accumulated in our meteorological storehouse in the past 300 years), there still seems to be "only a whirling round about and perpetual agitation, ending where it began." We still don't know how much the solar energy variations affect our weather and climate, or what causes climatic changes; we still don't know which is the hen and which the egg—temperature (pressure) or wind (vorticity)—in producing cyclogenesis; we still don't know what produces changes in the height of the tropopause or even how high it is over vast areas of the globe (e.g. the Arctic or Tibet, Mongolia and Siberia); nor what the ozone, CO_2, nitrogen, pH or radioactive content of the atmosphere is; nor how typhoons or hurricanes are formed or what causes rain or snow or ice to form in clouds. Finally, and most painfully we must admit that we can't forecast the weather 2 days, let alone 2 months or 2 years ahead with much more confidence than we could 70 years ago.

So anyone who puts much value on our present, though vast, store of knowledge is deluding himself and anyone who doubts that the next century will see tremendous advances in our science—from yet undreamed of instruments or ideas—is also blind.

But it doesn't hurt to look back once in a while and see what has been done, so we can know enough not to repeat past failures or mistakes, and can see what remains to be done. This is especially important at this time in view of the vast and concerted international effort which will be made in the next 5 years (IGY-1957/8), involving the expenditure of $150 million or more and thousands of workers who may be unfamiliar with the literature pertinent to their field of activity.

So we have attempted (during the past 5 years) to arrange our stockpile of knowledge in an orderly fashion so that the busy researcher could more quickly find out what had or had not been done and thus have more time to spend in actual progressive research. This involved two major operations: (1) keeping the ever increasing volume of *new* material from clogging up the very entrances of the warehouse so no one could even get in to see what was contained therein; and (2) as time permits making "little piles" of like material out of the unarranged or only partially arranged material left over from past years.

Meanwhile, anyone wishing to make an exhaustive survey of the literature in any specific field of pure or applied meteorology can find in Part II of the current issue (p. 83) a number of bibliographic sources which have been compiled by many capable and indefatigable workers in this "storehouse." Particular credit should be given to C. E. P. BROOKS (6A–3) who organized some 30,000 items between 1920 and 1948 and has contributed several thousand more since 1949 to Meteorological Abstracts (6A–7); to MAURICE MÉZIN for the Bibliographie Météorologique Internationale (6A–4) which contains 30–40,000 classified references (1921–1952); to OLIVER FASSIG who compiled 60,000 references (1590–1889) of which 16,000 were published (6A–1), and to KARL KEIL (6A–5) and others. Finally anyone wishing to make a quick survey of literature on any detailed subject or geographic area can find such sources of material by consulting the Outlines at the beginning of the Special Bibliographies in the Jan. and Feb. 1955 issues.

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FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to bring to the attention of meteorologists current literature in their field and in related fields and to provide bibliographic information on various subjects, as interest demands.

Part I contains abstracts of current literature in the fields of meteorology, oceanography, etc., arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of important references on a special subject. No attempt is made to prepare exhaustive bibliographies; instead, the aim is to include a representative cross section of the various aspects of a subject.

Bibliographies published in the successive issues were:

Vol. I, 1950

1. Atmos. Pollution	2. Aerobiology	3. Cloud Physics	4. Hail
5. Tornadoes	6. Volcanic Dust	7. Climat. Changes	8. Thunderstorms
9. Icing	10. Acoust. Propagation	11. Evaporation	

Vol. II, 1951

1. Extended Forecast.	2. Long Range Forecast.	3. Soil Temp.	4. Constants, etc.
5. Clim. of Near East	6. Clim. of Middle East	7. Special Winds	8. Radar Storm Detect.
9. Condensation Trails	10. Clim. of N.E. Africa	11. Mountain Met.	

Vol. III, 1952

1. Clim. of N.W. Africa	2. Carbon Dioxide	3. Clim. of Argentina, etc.	4. Dew
5. Objective Forecast.	6. Stratus Forecast.	7. Urban Climatology	8. Clim. of C. Africa
9. Visibility	10. Glaze and Rime	11. Free Air Turbulence	

Vol. IV, 1953

1. Turbulence Theory	2. Turbulent Diffusion	3. Frost	4. Clim. of Australia, etc.
5. High Level Winds	6. Winds in Stratosphere	7. Jet Stream	8. Radiation Bioclim.
9. Clim. of Pacific	10. Auroras	11. Sferics	

Vol. V, 1954

1. Oceanog. Met.	2. Clim. of S.E. Asia	3. Auroral Physics	4. Tropopause
5. Balloons	6. Numerical Forecast.	7. Radiation Data	8. Vertical Motion
9. Clim. of Arctic	10. Industrial Met.	11. Wind Waves and Swell	

Bibliographies published this year are:

1. **Bibliography of Bibliographies on Meteorology,** Vol. 6, No. 1, Jan. 1955

Forthcoming bibliographies will be:

2. **Textbooks and Monographs Containing Subject Bibliographies,** Vol. 6, No. 2, Feb. 1955
3. **Storm Surges,** Vol. 6, No. 3, March 1955

Other bibliographies in preparation are:

Actinometers
Arctic Synoptic Meteorology
Climate of the Arctic
Cosmic Rays in the Atmosphere
Fog Forecasting
Indoor Climatology
Microwave Propagation
Night Airglow
Ocean-Atmosphere Energy Exchange
Ozone
Singularities
Snow Cover
Synoptic Aerology
Tropical Cyclones

Part III contains a listing of the contents of those journals which are primarily meteorological. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the December issue cumulative author, subject, geographical and journal indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where the material may be found. The Union List of Serials (Gregory) is the source of most of the symbols used. In some cases, where no symbol has been assigned to a library, one will be devised according to the principles of the Union List.

Library symbols used frequently may be found in the following list:

DA:	U. S. Dept. of Agriculture Library, Washington, D. C.
DBS:	U. S. Bureau of Standards Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DN-HO:	U. S. Navy Hydrographic Office Library, Suitland, Md.
DSG:	U. S. Army Medical Library, Washington, D. C.
DSI:	Smithsonian Institution Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
GB-MO:	Great Britain, Meteorological Office Library, Harrow, England.
MH-BH:	Harvard University, Blue Hill Observatory (and American Meteorological Society) Library, Milton, Mass.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicates a good bibliography.
!	before an entry indicates a synoptic case history study accompanied by charts.

Geographic locations are in the English form rather than the form used locally, for example, Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherwise stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to the Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months are abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Number (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thus an entry will read as follows:

Meteorologische Rundschau, 2(5/6):146–151, May/June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (Vol. 2), *Heft* 5/6 (No. 5/6), *pages* 146–151, May/June 1950.

The Missing Pages In This Volume Are Advertisements

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

TEXTBOOKS

6.1–1 551.5(02)

Atmosfera zemli. Sbornik. [Earth's atmosphere. Symposium.] Moscow, Gosud. zdat. Kul'turno-Prosvetitel'noĭ Literatury, **1953.** 422 p. fig., tables, chart, illus. Price: 3 r. 70 k. **DLC**—This is a fascinating and challenging book for popular use (30,000 copies ere printed), consisting of 14 articles by different authorities, arranged under 5 major heads: 1) atmosphere and sun, 2) weather and climate, 3) work of the wind, 4) air and life and) wealth of the earth's atmosphere. An article by B. L. DZERDZEEVSKIĬ on atmospheric ructure is an accurate and quite technical treatise on every aspect of the troposphere, strato- here and ionosphere and processes going on in these regions. The second article by the late rof. N. N. KALITIN discusses the physical and physiological aspects of solar radiation in all titudes and under varying weather conditions. Ch. 3, by A. KH. KHRGIAN, deals with otical phenomena in the atmosphere (halos, mirage, visibility, rainbows, etc.). The section n weather and climate, contains articles by A. P. GAL'TSOV on weather, weather analysis and eather forecasting; by V. IU. VIZE on the Arctic and Africa; by L. A. CHUBUKOV on weather nd climate and by S. A. SAPOZHNIKOVA on microclimatology, climate over towns, forests, lakes; ow microclimate, soil and slope microclimate, dust storms and their prevention, and human imatology. The section on work of the wind has an article by B. A. FEDOROVITCH on action wind on soil and the earth, one by N. A. BELINSKIĬ on wind, waves and inundations, one by . V. KARMISHIN on the use of wind power, showing many conventional and several recent odels of the wind generators for use in the Arctic. The section on air and life contains rticles by N. S. SHCHERBINOVSKIĬ on the relation of the atmosphere to plants, birds, fish, nimals and insects; one by G. N. KASSIL' on man and air, atmospheric pollution, etc. and ne by M. I. GOL'DIN on microbes and air in Arctic, at sea, in upper air and in rooms, etc.; nd the final section on wealth of the air by D. IU. GAMBURG, goes into the composition of the mosphere, the rare gases, CO_2 and nitrogen cycles, air conditioning, etc. Although designed r high school students every chapter is written by an outstanding specialist in a particular eld of meteorology, and contains an amazing amount of technical information not usually und in such elementary texts, as well as a host of clever schematic diagrams and beautifully olored photographs or charts. No literature citations are given, though there is a great deal historical material concerning the Russian contributions in each field. An English edition this book would be welcome. *Subject Headings:* **1. Elementary meteorology 2. Russian ience 3. Collected works 4. Textbooks. I. Dzerdzeevskiĭ, B. L. II. Kalitin, N. N. I. Khrgiian, Kh.**—*M.R.*

6.1–2 551.5:551.46(04)

Lane, Ferdinand C., **All about the sea.** Illustrated by Fritz Kredel. New York, Random ouse, **1953.** 148 p. **DLC**—This is another of the new "All about" series of popular science ooks for children 9–12, published in 1953 by Random House (*see item* 5.8–12, Aug. 1954, *AB* for similar book on weather by I. R. TANNEHILL). The subject range is naturally ery broad and the treatment of each subject brief and descriptive rather than technical. he sections of interest to teachers of meteorology are those on the origin of the sea, the waves, des, ocean currents, salinity, sailing and, finally, on control of climate and weather by the a. Half of the book deals with life in the sea and a quarter with geological and physical pects of the deep sea or bottom. The numerous illustrations are accurate and effective. *ubject Headings:* **1. Popular science books 2. Oceanography.**—*M.R.*

6.1–3 551.578.41(02)

*†Nakaya, Ukichiro, **Snow crystals; natural and artificial.** Cambridge, Harvard Univ. ress, **1954.** 510 p. 188 plates, 514 figs., 39 tables, bibliog. p. 312–314. **DLC**—This is a

monumental piece of work (based on over 20 years of research) which fortunately was reproducible even though the original plates were completely destroyed in 1946. It differs from BENTLEY's famous work in that it is arranged like a textbook, with chapters and text compiled in logical order, in addition to the hundreds of excellent microphotographs of snow crystals which illustrate the 100 odd subjects dealt with in the sub-sections of the book. The 8 major divisions of the text, or chapters, cover: 1) Observations, photomicrography, etc. of various types of ice crystals, snow and graupel; 2) Classification of snow crystals and frequency of occurrence of each type; 3) Physical properties of snow crystals (form, mass, rate of fall, change); 4) Artificial production of frost crystals and 5) of snow crystals; 6) Investigation of physical properties of artificial snow; 7) Comparison of natural and artificial snow crystals, 8) Recent (post-war) research on snow crystals and ice nuclei in the atmosphere and laboratory. An appendix gives the International Snow and Ice Commission Classification of snow crystals for practical purposes, a bibliography of 10 publications from *Hokkaido University. Faculty of Science, Journal* from 1933–1938 which comprise most of the contents of this book, and 90 other references. Finally, there are >1400 large, beautiful photo-micrographs of snow crystals of every conceivable type, with emphasis on structure rather than form. A name and a subject index assist the reader in locating particular information. The last chapter contains references to the 1949–52 publications of SCHAEFER, AUFM KAMPE and WEICKMANN, HOUGHTON and other workers in the field of cloud physics. It points out that the work of SCHAEFER does not duplicate that of the author or vice-versa, as the former deals with artificial formation of ice nuclei whereas the latter deals with artificial formation of snowflakes in the more mature stage. The special cold chamber 6 m×6 m×6 m with controlled humidity and temperature (down to −50°C), constructed in 1935, gave the author the opportunity to produce the "first artificial snowflake" and to reproduce all the forms found in nature and some which had not yet been discovered until after the artificial form had been produced. It is concluded that the form of crystal is dependent on temperature (in nature, upper air temperature) as the vapor pressure difference is strongly dependent on temperature and vapor pressure difference is the real controlling factor. All of the work presented is supported by exhaustive quantitative data in statistical or graphical form. *Subject Headings:* **1. Snow crystals 2. Cloud physics.**—*M.R.*

6.1–4 551.5:629.13:37(02)

New York (State). Bureau of Industrial and Technical Education, **Junior aviation meteorology.** Albany, N. Y., Pub. by the Bureau, [1949]. 115 p. illus., refs. throughout, bibliog. p. 112–114. **DWB**—A manual designed to aid industrial arts teachers in organizing and teaching laboratory courses in meteorology and in manufacturing (in the shop or laboratory) simple instruments and devices for observing meteorological elements. The separate sections are devoted to: I. The meteorology center; II. Weather; III. Elements of weather and instrument projects: (A) Pressure, (B) Humidity, (C) Precipitation, (D) Wind, (E) Clouds; IV. Air masses and fronts; V. The weather map; VI. Weather forecasting and VII. Educational material, references, films and humidity tables. The experiments are excellently illustrated, but the meteorology is very simplified. *Subject Headings:* **1. Laboratory manuals 2. Elementary meteorology 3. Textbooks 4. Aviation meteorology courses.**—*M.R.*

6.1–5 551.5:63(02)

*Sanson, J. (*Co-Director, French Météorologie Nationale*), **Conférénces de météorologie appliquée a l'agriculture.** [Conferences on meteorology applied to agriculture.] Paris, Imprimerie Nationale, **1952.** 153 p. 56 figs. (charts, graphs, tables, colored synoptic map), forms (fold.), colored phenological plates. At head of t-p: Ministère des Travaux Publics . . . Météorologie Nationale. **DWB**—A nicely edited course for anyone (especially in France) studying agricultural meteorology. The approach is mainly the practical one—only about 10 pages are devoted to general meteorology (water vapor, clouds, air masses, cyclones and fronts) and the rest of the course deals with synoptic meteorology; forecasting (short, medium and long range) for an area or a small locality; the effect of radiation, temperature, frost, precipitation and heat and humidity combined on plants and insects; the recording and compilation of observational data (publication, statistical methods and phenological

observations); use of forecasts and climatic data in agricultural planning; prevention or insurance against loss or damage; artificial rainfall stimulation; air conditioning and, in the sixth part, the statistical methods of research into relation between climate and crops. *Subject Headings:* **1. Agricultural meteorology 2. Statistics in climatology 3. Textbooks 4. France.** —*M.R.*

6.1–6 551.501:53.081.7

*Smithsonian Institution, **Smithsonian physical tables.** 9th rev. ed. prepared by William Elmer Forsythe. *Smithsonian Miscellaneous Collections*, Vol. 120, **1954.** 827 p. 901 tables. **DWB, DLC**—Considering the comprehensiveness of the Smithsonian Meteorological Tables (*see* 2D–35, April 1951, *MAB*) it is at first glance hard to see how these Physical Tables could have much value for a meteorologist. But on closer scrutiny it can be seen that such tables as those on black body radiation energy, photometry, thermodynamics, thermal properties of gases, acoustics, optics, aeronautics (standard atmosphere, airflow, etc.), diffusion, vapor pressure, surface tension, radio propagation, ionosphere, transmission of radiation, spectroscopy, atmospheric electricity, nuclear physics, cosmic rays, X-rays, solar radiation, astrophysics, oceanography and earth temperatures, to name only a few categories of the wealth of subject matter contained in the 901 tables of this 9th rev. ed., are of extreme value for the physical or practical meteorologist. *Subject Headings:* **1. Physical tables 2. Physical constants 3. Physical meteorology. I. Forsythe, William Elmer.**—*M.R.*

6.1–7 551.5(02)

Taylor, George Frederic, **Elementary meteorology.** New York, Prentice-Hall, **1954.** 364 p. numerous figs. (incl. photos), tables, refs. at end of each chap. **DWB**—This latest textbook on elementary meteorology contains much information regarding recent advances in application of theoretical discoveries in astrophysics, atomic physics, oceanography, climatology, hydrology, etc. to meteorology or atmospheric physics. The first chapter discusses the origin of the universe, the solar system and the earth. Ch. 2 takes up the usual weather elements including paragraph on radar storm detection, sferics and visibility observations; Ch. 3 is on the structure and composition of the atmosphere, tropopause, stratosphere, ionosphere and exosphere; Ch. 4 on heat and moisture, including radiation, stability, energy and mass exchange; Ch. 5 on pressure and local and world wide variations thereof; Ch. 6 on wind and atmospheric circulation—the jet stream, streamline analysis and stratospheric winds; Ch. 7 on condensation and precipitation; Ch. 8 on clouds and fog; Ch. 9 on air masses; Ch. 10 on fronts and storm structure; Ch. 11 on severe storms (tornadoes and squalls); Ch. 12 on tropical weather; Ch. 13 on synoptic charts (surface and upper air); Ch. 14 on weather forecasting; Ch. 15 on climatology. Recent developments in cloud modifications, jet stream analysis, radar storm or hurricane tracking and study, contrails, objective weather forecasting, synoptic climatology, planetary atmospheres, extended forecasting, numerical weather prediction, the World Meteorological Organization, etc. are touched on to a greater or lesser degree. Synoptic codes and conversion tables are appended. *Subject Headings:* **1. General meteorology 2. Textbooks.**—*M.R.*

REVIEW ARTICLES AND MAJOR WORKS

6.1–8 551.582(432.2)

§†*Koch, Horst Günter (*Jena Univ.*), **Wetterheimatkunde von Thüringen.** [Local weather studies in Thüringen.] Jena, Gustav Fischer, **1953.** 190 p. 75 figs., numerous tables, 292 refs. German summary p. 170–171. **DLC**—This is an extremely satisfactory analytical study of the physical characteristics of the climate and the weather of Thuringia—the part of Germany between Erfurt and Weimar and south to the Czechoslovakian border. The study begins with the annual variation in weather elements; then takes up and analyzes aerological data, the inversions near the ground, the free föhn which is characteristic of this region, the city and valley climates and climate of slopes; then the general—upper air and local winds, cloud and sunshine, precipitation, snow, thunderstorms (analyzed according to synoptic weather types as well as by season and regime), floods, synoptic weather situations

in general and, finally, bioclimatology including soil temperature and moisture, phenology, forest meteorology, "cooling power" and nuclei or dust content of air. *Subject Headings:* **1. Local climatic studies 2. Climate of Thuringia 3. Thuringia 4. Germany.**—*M.R.*

6.1–9 551.507.362:551.510.53

Newell, Homer E., Jr., **Rockets and the upper atmosphere.** *Scientific Monthly*, 78(1):30–36, Jan. **1954.** 9 figs., 17 refs. **DWB**—A semitechnical résumé of the recent discoveries in upper atmosphere physics made by using various types of rockets as instrument carriers. The ozone absorption of UV light and resulting knowledge of solar emission in various spectral regions, data on density, temperature, ozone concentration, electron and ion concentrations, solar X-rays, winds and cosmic rays and other physical properties of the high atmosphere are discussed and curves presented to show quantitative relations based on latest rocket results. Detailed spectrograms of the sun in short wave lengths above the absorption layer, chemical constitution of the upper atmosphere, heights of luminous emitting layers, and standard data at higher levels than heretofore obtained are fields for future effort. *Subject Headings:* **1. Rocket research 2. Upper atmosphere physics 3. Standard atmosphere.**—*M.R.*

6.1–10 551.501.83:551.515.4

*Norinder, Harald, **Distanslokalisering av åskväder.** [Distant location of thunderstorms.] *Vetenskaps-Soctietetens i Upsala, Årsbok*, **1950.** p. 69–130. 54 figs. **DWB**—A lengthy review of the entire field of sferics thunderstorm location from POPOV and BRANLY in the 1890's to the author's own recent work. The instruments and equipment used by the various investigators are illustrated photographically and diagramatically, record sheets are reproduced and results of radio location shown on maps and compared with the climatological estimates of C. E. P. BROOKS (1925). Role of sferics of WATSON-WATT, LUGEON and BUREAU are discussed and illustrated in great detail. The greatest attention is given to the cathode ray oscillograph as used by the author and collaborators in Sweden and vicinity for storm location. *Subject Headings:* **1. Sferics storm detection 2. Sferics instruments 3. Thunderstorm location.**—*M.R.*

6.1–11 551.582.2(73)

*U. S. Weather Bureau, **Climatic summary of the United States. Supplement for 1931 through 1952.** Pub. 1953–. Its *Bulletin W*, 1953–. entirely tables. Price varies, about $.25 each section. **DWB.** Sections seen: No. 17, **Minnesota.** 37 p. No. 26, **New York.** 65 p. No. 27, **North Carolina.** 45 p. No. 33, **South Carolina.** 27 p. "Supplements are in numbered sections to correspond with standard climatological sections, in alphabetic sequence, with Alabama as 1. . . ." 1931–1952 Supplements are a supplement to its **Climatic Summary of the United States, 1930 ed.** (Bulletin W) which contained data from the establishment of the stations through 1930, pub. 1932–1937. [3rd ed.] 3 vol., Sections 1–106. Climatological data for the United States first systematically collected and printed in Bulletin Q about 1906. It was then expanded to an entire set known as Bulletin W, entitled **Summaries of Climatological Data by Section,** 2 vol., Sections 1–106, pub. 1912? Appeared also as separates. This might be called its first edition. In 1925, the [2nd ed.] was completed, being a reprinting of the first edition, with additional data through 1920 in some cases. It appeared in 2 vol., sections 1–106. A 3 vol. reprinting, with no additional data, appeared in 1926. The 1930 edition [3rd ed.] appeared under the current title, **Climatic summary of the United States.** The supplements for 1931 through 1952 are duplicated from punch card tabulations by purely mechanical means. No attempt has been made to combine mean value for 1931–1952 with those for period of record ending with 1930, although the latter values and length of record are given and the combination can be made by the user if he cares to go to the trouble of multiplying, adding and dividing each respective monthly value for any given station. A station history and index table is included with each supplement. Data tabulated include for each month of each year, and for the year as a whole, the total precipitation, and for the period of record the monthly and annual mean maximum, mean minimum and mean daily temperatures, highest and lowest temperatures on record for each of the 100 to 300 cooperative and higher orders stations in the respective sections. The frost, cloudiness, number of days with precipitation and snow data contained in early editions of

Bulletin W have been omitted. *Subject Headings:* **1. Climatic data publications 2. U. S. Weather Bureau Bulletin W. 3. Climate of United States 4. United States.**—*M.R.*

6.1–12 551.574.1:016

†Weickmann, H.; Anderson, Charles E.; Benton, George S.; Braham, Roscoe R.; Hall, Ferguson and Junge, Christian, **Report of the Committee on Cloud Physics, 1951–1953.** *American Geophysical Union, Transactions*, 35(4):637–644, Aug. **1954. MH-BH**—Progress in cloud physics from 1951–53 is reviewed under the following general subject headings: (B) Nuclei, (C) Formation and properties of cloud particles, (D) Formation and properties of clouds, (E), Natural precipitation, (F) Artificial precipitation and cloud modification, (G) Thunderstorms, tornadoes, hailstorm and thunderstorm electricity. The many references cited in this report are given in detail in *Meteorological Abstracts*, v. 5, No. 7, p. 856–864, including, additionally, a section (A) On general works. *Subject Headings:* **1. Cloud physics 2. Cloud physics bibliographies. I. American Geophysical Union. Committee on Cloud Physics.**—*M.R.*

6.1–13 551.557:551.510.52

†Widger, William K., **Survey of available information on the wind fields between the surface and the lower stratosphere.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 25, Dec. **1952.** 154 p. figs., 46 refs. Append. I: Mintz, Yale and Dean, Gordon, **Observed mean field of motion of the atmosphere** (*see* 4.6–9, June 1953, *MAB*). Append. II: **Annotated bibliography on high level winds** (*see* May-June 1953, *MAB*). Append. III: Discussion of and example from Henry, T. J. G. and Armstrong, G. R., **Aerological data for Northern Canada** (*see* 1–152, Jan. 1950, *MAB*). Append. IV: Cale, Richard E., **Preliminary report on predominant atmospheric windflow and temperature patterns for the North Pacific and East Asia.** charts. **DLC, MH-BH**—An attempt to assemble and analyze all of the available data and information on winds in the troposphere, as a companion volume to **Air Force Surveys in Geophysics,** No. 24, which covers winds in the stratosphere. Climatological information regarding force and direction of winds at various heights and in various regions and theoretical information regarding circulation and accuracy of forecasting, plus abstracts of a large number of papers taken from *Meteorological Abstracts* and other supplementary information as listed above, make this a valuable, if not a complete, compendium of information and source of data on wind. *Subject Headings:* **1. Tropospheric winds 2. Upper air winds 3. Literature surveys 4. Meteorological abstracts.**—*M.R.*

GENERAL METEOROLOGY

6.1–14 551.5:003.62

Entwurf zu einem Normblatt "Formelzeichen der Meteorologie und Geophysik." [Outline for a reference sheet "Symbols for meteorology and geophysics."] *Meteorologische Rundschau*, 7(7/8):146, July/Aug. **1954. DWB**—Lists a number of symbols proposed by the Deutsche Normenausschuss for units and magnitudes (space and time, statics and dynamics, thermodynamics and humidity, light and radiation, gravity anomalies and geomagnetism). Explanations and definitions are added. *Subject Headings:* **1. Meteorological symbols. I. Deutscher Normenausschuss.**—*C.E.P.B.*

6.1–15 551.5:06

Hoinkes, H. (*Innsbruck*), **Die Tagung der Deutschen Meteorologischen Gesellschaft in Berlin vom 27. September bis 4. Oktober 1953.** [Conference of the German Meteorological Society in Berlin from Sept. 27 to Oct. 4, 1953.] *Wetter und Leben*, 5(11/12):215–222, Dec. **1953. MH-BH**—The author summarized briefly some of the more important topics and papers discussed at the 1953 meeting of the German Meteorological Society. These include: (1) H. W. Dove by L. Weickmann; (2) on weather prediction by E. Palmén (Helsinki); (3) the origin and maintenance of atmospheric drifts by R. Mügge; (4) atmospheric circulation by A. Similä, H.-K. Meyer, K. Frey, etc.; (5) short and long range prediction by M. Kromrey, W. Kopp, H. Koschmieder and F. Defant, etc.; (6) air mass analysis by H. Flohn;

(7) methods for improving forecasting by E. LINGELBACH, A. G. FORSDYKE, etc. and (8) climatology, turbulence, optics, radiation, agriculture, meteorology and micrometeorology by J. CLAUSS, E. EKHART, H. LETTAU, K. BROCKS, F. MÖLLER, etc. *Subject Headings:* **1. Meteorological Conferences 2. German Meteorological Society.**—*I.L.D.*

6.1–16 551.5:63:581.1

Marchi, Victorio, **Introducción a la ecología agrícola.** [Introduction to agricultural ecology.] *Revista Meteorológica*, Montevideo, 12(44/45):5–21, June/Dec. **1953.** Introduction by José Tiscornia p. 5–6. **MH-BH**—This article was first published in Italian and English in *Rivista di Ecologia*, Perugia. It is a general review of the development of ecology, and more particularly of agricultural ecology in Italy. Special emphasis is put on recent progress achieved along the lines of the "speed-mass-structure" concept as a criterion of the productivity and resistance of plants. *Subject Headings:* **1. Agricultural ecology. I. Tiscornia, José.**—*G.T.*

6.1–17 551.5:06

Gilead, M., **The technical assistance programme in meteorology in Israel. A review and appraisal.** *World Meteorological Organization, WMO Bulletin*, 3(2):67–69, April **1954. MH-BH**—A brief summary of assistance given to Israel by the U.N. Technical Assistance Program through WMO participation, with special mention of the visit in 1952 of M. H. HALSTEAD of Johns Hopkins Univ. (U.S.A.) who lectured and gave advice on micrometeorology, turbulent exchange, evapotranspiration and other aspects of agricultural meteorology. G. V. PARMELEE of the A.S.H.V.E. (U.S.A.) consulted and lectured on indoor climates, building design, air conditioning, etc. in 1953. WOUTER BLEEKER of the Netherlands (K.N.M.I.) has been in Israel since March 1, 1954 to assist in synoptic meteorology and forecasting problems, and another expert on radiosondes will be included in the 1954 program. *Subject Headings:* **1. WMO Technical Assistance Program 2. Israel. I. Halstead, M. H. II. Bleeker, W. III. Parmelee, G. V.**—*M.R.*

6.1–18 551.5:06

Harmantas, C. (*U. S. W. B., Wash., D. C.*), **First Session of the Commission for Instruments and Method of Observation, Toronto, 1953.** *American Meteorological Society, Bulletin*, 34(10):438–440, Dec. **1953. MH-BH**—The WMO, CIMO met at Toronto Aug. 10–Sept. 5, 1953, concurrently with the Commission for Aerology. JOHN PATTERSON presided and A. PERLAT of France, the vice president, was elected president for the future. Details of the sessions, attendance and a number of recommended practices are presented in this report. Draft Technical Regulations which were drawn up included terms of reference for the Commission and proposals for various guides for use by other organizations and member countries. Barometry, radiosonde comparisons, marine observations, humidity, visibility, wind speed and radiation measurement, etc. were among the subjects covers by CIMO recommendations. *Subject Headings:* **1. WMO. Commission for Instruments and Methods of Observation 2. WMO Conferences 3. Instrument technology 4. Observation techniques.**—*M.R.*

6.1–19 551.5:612.2

Rosenkranz, Friedrich, **Schülerleistung und Wetter.** [The efficiency of students and the weather.] *Wetter und Leben*, 5(5–7):121–123, Aug. **1953. MH-BH**—The difficulties encountered in attempting to relate scholastic performance with weather type are pointed out. Nevertheless using a rather rough statistical analysis the author concludes that imminent föhn and warm air incursions, especially in combination, reduce scholastic performance as much as a week before their occurrence. Scholastic performance increases immediately before the passage of warm air and also shortly after the passage of cold air. *Subject Headings:* **1. Weather and man 2. Weather effects.**—*I.L.D.*

6.1–20 551.5:629.13:37

Collins, Leighton, **Pity the weatherman.** *Air Facts*, New York, 16(8):13–44, Aug. 1, **1953. DWB**—The 18-months correspondence course offered to U. S. Weather Bureau per-

sonnel (training course for pilot briefers) by the Training Section of the Weather Bureau's Domestic Aviation Section in Washington is reviewed. The course comprises subjects bearing on topography, route and terminal weather, flight plan problems and briefing problems. Many examples are quoted from the courses "Typical Briefing Problems" and "Route Weather." The training course was initiated on a mandatory basis for employees who had passed examinations for GS-7 ratings in Oct. 1951. *Subject Headings:* **1. Teaching of meteorology 2. Aeronautical meteorology.**—*G.T.*

6.1–21 551.5:03

Fontserè y Riba, Eduardo, **Assaig d'un vocabulari meteorològic Català.** [Meteorological glossary in Catalan.] *Institut d'Estudis Catalans. Seccio de Ciences, Barcelona, Arxius*, Vol. 14, **1948.** 81 p. **DWB**—In Pt. 1 of this glossary some 860 meteorological terms are listed alphabetically and their definitions given in Catalan. Terms and definitions are mainly based on the British Meteorological Office Glossary and on the Lexique Météorologique of the Office National Météorologique de France. Pt. 2 gives some 600 English and 300 French terms and their Catalan equivalents. Synoptic and dynamic meteorology and climatology are the principle fields covered in each part. *Subject Headings:* **1. Meteorological glossaries 2. Glossaries 3. Dictionaries 4. Catalan language.**—*G.T.*

6.1–22 551.5:35

Langlo, Kaare (*Met. Inst. of Norway*), **Meteorologien i forsvarets tjeneste.** [Meteorology in military defense.] *Norsk Artilleri-Tidsskrift*, Kristiania, 3:129–151, **1952.** 11 figs. **DLC**—Excerpt of a lecture presented before the Officer's Club in Oslo on March 3, 1952. Defense branches can utilize: 1) Information on actual weather condition, 2) Forecasts (safety-danger), 3) Climatological data and 4) Basic information for calculating ballistic data—services which a meteorologist can give. Air density data are particularly important for the artillery. For Gardermoen, Sala and Tromsö exact data can be furnished, for other places interpolated values are available. It is mentioned that such values were used by the Finnish artillery during the Russo-Finnish winter war. *Subject Heading:* **1. Military meteorology.**—*W.N.*

6.1–23 551.5:37

Canada. Meteorological Division, **A course in the School of Graduate Studies, University of Toronto, Leading to the degree of Master of Arts in Physics (Meteorology).** *Canada. Meteorological Div., Cir.*, 2280, TRA-16, April 23, **1953.** 14 p. **DWB**—The special course, whose details are given in this circular, is offered by the University of Toronto in co-operation with the Canadian Met. Div. The subjects covered are: 1) Differential equations of mathematical physics, 2) Thermodynamics, 3) Hydrodynamics and wave motion, 4) Statistics and climatology, 5) Atmospheric thermodynamics and radiation, 6) Dynamic meteorology, 7) Synoptic meteorology, 8) Meteorological instruments, 9) Synoptic meteorology laboratory and 10) Meteorological seminar. Syllabuses for "summer training for M.A. course candidates" and "advanced practical training" are appended. *Subject Headings:* **1. Teaching of meteorology 2. Meteorological curricula.**—*G.T.*

6.1–24 551.5:37

Canada. Meteorological Division, **Syllabus for "The Introductory Course in Meteorology."** *Canada. Meteorological Div., Cir.*, 2277, TRA-15, April 20, **1953.** 17 p. 6 refs. **DWB**—The training course described is offered by the Canadian Met. Div. to graduate students with sufficient background in mathematics and physics and a number of specified personal qualities. It is a six-months course whose successful completion qualifies for Meteorologist Grade 1. Details of the Academic Course (synoptic meteorology, atmospheric thermodynamics and radiation, dynamic meteorology, physics of the upper atmosphere, meteorological instruments, climatology, synoptic meteorology laboratory, special orientation lectures—a total of 515 hours) and of the course in Applied Meteorology (map analysis and forecasting, briefing techniques and practice, facilities and services available to aviation, instructional techniques and practice, service indoctrination, forecast office procedures and operations—a total of 337 hours) are given. *Subject Headings:* **1. Teaching of meteorology 2. Meteorological curricula.**—*G.T.*

6.1–25 551.5(04)

Jurwitz, Louis Roy (*U. S. W. B., Phoenix, Ariz.*), **Weather and its ways.** *Arizona Republic*, Phoenix, March **1953.** 13 p. illus. Abstracted from reprint. **DWB**—A collection of 12 popular one-page articles with drawings and photographs, reprinted from various issues of the *Arizona Republic*. The articles discuss atmospheric pressure and wind, storms, atmospheric absorption by water vapor, condensation of water vapor, the jet stream, dynamics of the atmosphere, weather of Arizona, meteorological services, etc. W. G. KNEELAND of the Republic staff was a collaborator. *Subject Headings:* **1. Popular meteorology. I. Kneeland, W. G.**—*G.T.*

6.1–26 551.501:620.16:623.45

Artificial weather for guided missiles. *Aviation Age*, New York, 18(5):60–64, Nov. **1952.** 5 figs. **DWB**—A 440 cu ft environmental test chamber used by Goodyear Aircraft Corp. of Akron, Ohio is described and illustrated. It is used to test guided missiles under conditions equal to those at altitudes up to 75,000 ft. Temperature range is from −16° to +200°F, humidity from 20 to 95% and pressure from 30 to 1 in. of mercury. It is also reinforced for high pressure. Atomized hot water can be introduced to produce high humidities at high temperature. Details of design, operation, control and recording are given. *Subject Headings:* **1. Calibration chambers 2. Test chambers 3. Guided missile testing.**—*M.R.*

6.1–27 551.5:519.2

Dedebant, Georges; Di Maio, R. and Machado, Emilio A. M. (all from *Argentine Nat. Met. Ser.*), **Las funciones aleatorias y su aplicación a la meteorología.** [Stochastic functions and their application to meteorology.] *Meteoros*, Buenos Aires, 3(2/3):140–173, April/Sept. **1953.** 21 figs., 2 tables, eqs. French summary p. 140. **DWB**—The stochastic functions of an entire index is defined as a series of stochastic numbers and the stochastic function of a continuous parameter as a limit of the preceding concept. The concepts covariance, autocorrelation, coherence spectrum, periodicity, continuity and stochastic derivatives are discussed mathematically. The introduction of HILBERTIAN space leads to an intuitive geometrical representation of the stochastic functions. As a practical application there is introduced an index of connections which takes into account the degree of continuity of the stochastic functions expressed numerically by a series of observations. (This article is a continuation of article abstracted as 5.8–16, Aug. 1954, *MAB.*) *Subject Headings:* **1. Stochastic processes 2. Hilbert space.** *Based on authors' abstract.*—*I.L.D.*

6.1–28 551.5:519.2

Dedebant, G.; Di Maio, R. and Machado, E. A. M., **La previşibilidad de las funciones aleatorias.** [Predictability of random variables.] *Meteoros*, Buenos Aires, 3(4):395–428, Oct./Dec. **1953.** 13 figs., eqs. In Spanish; Spanish and English summaries p. 395. **MH-BH**—It is shown that there are 3 types of random variables: 1) unrelated (inconex) such as the succession of figures in the value of π (3.1415926 . . .) where the variations cannot be predicted; 2) "Brownian" variables which can be partially predicted by scatter diagrams or regression techniques and 3) totally predictable variables (random oscillators) or analytical functions such as atmospheric data which can be extrapolated into the future. It is also shown how an "inconex" can be developed into a Brownian and a Brownian into an analytical type of variable. (*See item* 6.1–27 above.) *Subject Headings:* **1. Random variables 2. Statistics in meteorology 3. Regression techniques.**—*M.R.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATION

See also: **Smithsonian physical tables,** 6.1–6; **Guided missiles,** 6.1–26; **D layer damping** (Lauter), 6.1–121; **Radar storm detection** (Tolefson), 6.1–207.

6.1–29 551.501.42:551.571

Maksić, Branko, **Prilozi teoriji i praksi psihrometrijskih tablica.** [Contributions to the theory and practice of psychrometric tables.] *Zagreb. Sveučilište. Geofizički Institut, Radovi,*

Ser. 3, No. 4, **1953.** 58 p. figs., tables, refs., 106 eqs. In Serbo-Croatian; English summary p. 52–58. **DWB, DLC**—An elaborate mathematical study dealing principally with the errors affecting the numerical values in psychrometric tables. Particularly detailed analytical treatment is given to errors resulting from the use of tables not corresponding to the type of instrument used, errors resulting from non-consideration of the state of water on the wet bulb, errors resulting from non-consideration of atmospheric pressure, and suggestions for a simplification of psychrometric tables. *Subject Headings:* **1. Psychrometer tables 2. Serbo-Croatian language.**—*G.T.*

6.1–30 551.501.45:519.24

Essenwanger, Oskar (*Bad Kissingen*), **Neue Methode der Zerlegung von Häufigkeitsverteilungen in Gaus'sche Normalkurven und ihre Anwendung in der Meteorologie.** [New method of analysis of frequency distributions into normal Gaussian curves and their application to meteorology.] *Germany. Deutscher Wetterdienst, Berichte,* No. 10, **1954.** 11 p. 2 figs., 4 tables, 19 refs., 19 eqs. **MH-BH**—Proposes to subdivide climatological distribution curves into several normal distributions with different means and standard deviations, rather than to use higher distribution moments. The method of parabola smoothing on frequency papers was not found adequate, but a direct equalization with normal distributions is suggested. The work can be greatly simplified by using auxiliary tables. The results are obtained by trial and error until an adequate representation is achieved. The distributions of atmospheric pressure, vapor pressure, troughs and ridges are discussed as examples. *Subject Headings:* **1. Frequency analysis 2. Statistical techniques 3. Distribution curves.**—*A.A.*

6.1–31 551.501.6:551.547.1

Carlin, Albert V. (*U. S. W. B., Wash., D. C.*), **Meteorological charts in three dimensions.** *Monthly Weather Review,* 82(4):97–100, April **1954.** 5 figs. **MH-BH**—A method is described by which constant pressure contour charts can be drawn as stereographic pairs. These charts are then made into photographic slides which may be viewed in a stereoscope or projected on a screen to produce three-dimensional representations of constant pressure surfaces. Two or more pressure levels can be drawn on the same chart and will appear to be separated in vertical space when viewed. Other types of meteorological charts and graphical representations are amendable to this treatment. *Subject Headings:* **1. Constant pressure charts 2. Stereographic photography.**—*Author's abstract.*

6.1–32 551.501.81:551.515.4:551.507.352

Harrison, Henry and Post, Edgar A., **Evaluation of C band (5.5 cm) airborne weather radar.** Denver, Colorado, U. S. Air Lines, Inc., March 1, **1954.** 108 p. 218 figs., 13 refs. **DWB**—This complete description of an air-borne radar unit is accompanied by an unusual amount of illustrations, most of which are radar screen photographs showing thunderstorm echoes. Operational details and results of flight tests made with the unit are discussed *in extenso.* At least 80 out of the 133 hours of flight were made under thunderstorm conditions, including thunderstorms of all types and sometimes associated with hail, tornadoes and cloud bursts. It is found that C-band radar will penetrate at least 15 mi of heavy rain (>60 mm/hr) and of hail shafts. It will also separate storm and terrain echoes. *Subject Headings:* **1. Airborne radar equipment 2. Radar photographs 3. Radar precipitation echoes 4. Thunderstorm reconnaissance flights.**—*G.T.*

6.1–33 551.501.81:621.396.029

Hitschfeld, Walter and Marshall, J. S., **Effect of attenuation on the choice of wave-length for weather detection by radar.** *Institute of Radio Engineers, I.R.E. Proceedings,* 42(7):1165–1168, July **1954.** 2 figs., 2 tables, 8 refs., 12 eqs. **DWB**—The performance of radars in storm detection is studied in a manner designed to help in the choice of the proper wavelength for the radar. Decreasing the wavelength increases the range in clear air, but the attenuation associated with the shortened wavelength cuts down appreciably the ability of the radar to look through intervening rain. It is concluded that for the certain detection of operationally significant storms, wavelengths shorter than about 5 cm should not be used. *Subject Headings:* **1. Radar storm detection 2. Atmospheric attenuation 3. Radar wavelengths.**—*Authors' abstract.*

6.1–34 551.501.81:551.577

Kiely, D. G., **Rain clutter measurements with C.W. radar systems operating in the 8-mm wavelength band.** *Institution of Electrical Engineering, Proceedings*, Pt. III, 101(70):101–108, March **1954.** 7 figs., 8 refs. **DWB**—The objects of this work were to investigate the extent of rain clutter using 8-mm continuous-wave radar systems with both a single aerial (common transmission and reception) and dual aerials (separate transmission and reception) and to investigate the reduction of this clutter by orthogonal polarization techniques. In the common transmission and reception case using polarization duplexing, the amplitude of the rain clutter was measured in terms of decibels below the valve power level by a direct comparison method and plotted against the rainfall rate in millimetres per hour. This was also done for the separate transmission and reception case, which did not employ a duplexer. The results showed that the rain clutter amplitude in the common transmission and reception case was some 60 db below valve power level for a moderate rainfall of 3 mm/h. In the separate transmission and reception case rain clutter decreased with increasing aerial spacing and was some 95 db below valve power for a rainfall rate of 3 mm/h with 2-ft diameter aerials spaced 3 ft center to center. Details of the methods of measurements, the equipment used and the experimental observations are given. *Subject Headings:* **1. Radar rainfall measurement 2. Radar wavelengths.**—*Author's abstract.*

6.1–35 551.501.81:656.6

Rodewald, Martin, **Niederschlagsbilder im Radargerät.** [Precipitation pictures in radar apparatus.] *Wetterlotse*, No. 76:185–194, Sept. **1954.** 7 figs. **DWB**—Movement on radar screen of showers may give warning of changes of surface wind direction, of rain or snow during loading or unloading, or of poor visibility due to tropical rain or snow. Radar may give warning of approach of a cold front, line squall or hurricane. Spiral traces in hurricane of Sept. 25, 1952, are reproduced. *Subject Heading:* **1. Radar storm detection.**—*C.E.P.B.*

6.1–36 551.501.9(97) 551.582(97)

La Grange, J. J., **The South African station on Marion Island, 1948–53.** *Polar Record*, 7(48):155–158, July **1954.** table. **DLC**—The settlement, including weather office, in 46°52′34″S, 37°51′32″E, is described. The main characteristic of the climate is the windiness, with gusts up to 108 mph. A climatic table of monthly averages, April 1948–Feb. 1953, is included. *Subject Headings:* **1. Meteorological stations 2. Local climatology 3. Marion Island, Indian Ocean.**—*C.E.P.B.*

6.1–37 551.501.9(98) 551.582(98)

Mitchell, J. L. (*R.A.F.*), **Aviation in the higher latitudes.** *Shell Aviation News*, London, No. 177:4–9, March **1953.** maps, photos. **DWB**—Includes the paragraphs: "Weather reporting" (p. 7), a general picture of Arctic weather services and their methods of operation; and "Climate of the Arctic" (p. 8), a summary of temperature, wind and cloudiness conditions, magnetic and auroral activity and optical phenomena in the Arctic. *Subject Headings:* **1. Arctic weather services 2. Climate of the Arctic.**—*G.T.*

6.1–38 551.501.9

Mount Washington Observatory, Gorham, New Hampshire, **News Bulletin,** No. 22, June **1953.** photos, tables. **DWB**—The twentieth anniversary number of this news bulletin contains a collection of articles (mostly brief) on various phases of the work conducted on Mt. Washington and on the climatic conditions there, as well as on the history of the station. Mount Washington Observatory was reoccupied in 1932 and has been run continuously since that date as a result of contracts by the U. S. Weather Bureau, the Air Forces, Harvard Univ., etc. It is now owned by Dartmouth College. From 1870 to 1877 it was occupied as a weather station the year round, and during summers from 1888 to 1892. Icing research has been conducted extensively and intensively during and since World War II. Cloud studies, solar radiation, cosmic ray investigations, snow, wind, turbulence and instrumental tests under rigorous conditions have added to the value of the station as a key weather reporting, climatological, and mountain meteorological station unaffected by increasing population or industrial or urban development. The history of the station is outlined by C. F. Brooks, the President

of the Corporation. Other articles are by V. J. SCHAEFER, WALLACE HOWELL and others who have worked or done research there. *Subject Headings:* **1. Mount Washington Observatory 2. Mountain meteorology 3. Mt. Washington, New Hampshire.**—*M.R.*

6.1–39 551.501.9:551.43 551.311.12

Murzaev, E. M., **Tian'shanskaia vysokogornaia fiziko-geograficheskaia stantsiia.** [Tien Shan high altitude physico-geographical station.] *Priroda*, Moscow, 42(12):51–59, Dec. **1953.** illus. **DLC**—The author describes the scientific work of the personnel at the Tien-Shan high altitude station situated at 2100 m near the Chon-Kyzylsu gorge, the investigation of Karabatkak glacier (14 km long, 150 m thick, moves 12 m/yr) and the meteorological platforms and instrument shelters. Glacier movements are determined by theodolites. Movement of detritus in mountains of Tereskey was also observed. Experiments to speed the melting of snow and ice artificially, by decreasing the albedo with dust, show that this artificial covering increases the discharge of a river by 54%. Microbiological, geochemical and geological investigations are also being carried out. *Subject Headings:* **1. High altitude observatories 2. Glacial investigations 3. Artificial snow melting 4. Tien Shan Mountain Observatory, U.S.S.R.**—*A.M.P.*

6.1–40 551.501.9:629.139

Oddie, B. C. V. and Ireson, W. H., **Errors of temperature measurements caused by the exhaust of jet aircraft.** *Meteorological Magazine*, London, 82(978):364–368, Dec. **1953.** 2 figs., ref., 2 eqs. **MH-BH**—Temperatures were measured at Finningley across and along exhaust stream from a Meteor jet, at distances of 30–200 yards. Excess over true air temperature ranged from 54°F at 30 yards to zero above 100–180 yards. Allowing for wind, it is found that effect of jet disappears in 14.4 sec or 94 yards. Suggestions about siting thermometer shelter on an airfield are made. The relation between fall of temperature and slowing up of jet, by mixing with surrounding air, is discussed. *Subject Headings:* **1. Instrument exposure 2. Airport stations.**—*C.E.P.B.*

6.1–41 551.501.9:551.510.535(99)

Ranzi, Ivo (*Prof. of Physics, Univ. Firenze*), **Una spedizione all 'Antartide Occidentale per lo studio della ionosfera.** [An expedition to the West Antarctic to study the ionosphere.] *Geofisica e Meteorologia*, Genoa, 1(2):3–4, Jan./Feb. **1953.** 3 figs. **DWB**—A short illustrated article describing the work (and its importance) of the expedition of the Argentine Navy to the Antarctic. Particular reference is made to the ionospheric research conducted at the base at Deception (63°S) in the South Shetlands Jan. 1951. This supplements the work of the 3 other ionospheric stations in the South American sector of the Southern Hemisphere—that at Huancayo, Peru, the non-automatic station operated since 1949 by the British at Malvine in the Falklands (51.7°) and an automatic station at Buenos Aires. At Deception meteorological and seismological observations are also made regularly. Early results show an anomalous minimum in the diurnal critical frequency of the F2 layer at noon. This indicates movements of masses of ionized air produced by thermal factors and controlled by the magnetic field of the earth. *Subject Headings:* **1. Argentine Antarctic Expedition 2. Ionospheric stations 3. Deception, South Shetland Islands.**—*M.R.*

6.1–42 551.501.9:551.509

Schumann, T. E. W., **The meteorological network of the southern quarter of the globe.** *South Africa. Weather Bureau, Notos*, 1(2):66–69, **1952.** 2 figs., table, 3 refs. **DWB**—Present meteorological network, south from 30°S presented on map and establishment of 10 additional stations proposed, including 6 permanent stations spaced round the coast of the Antarctic. Reports from merchant ships cover only certain routes. Whalers operate only during four summer months. *Subject Headings:* **1. Meteorological networks 2. Southern Hemisphere 3. Antarctia.**—*A.A.*

6.1–43 551.501.9(09)(51)

Starbuck, L., **A condensed history of the Royal Observatory, Hong Kong.** *Marine Observer*, 23(160):99–104, April **1953.** map, photo. **DWB**—Observations began Jan. 1, 1884.

Extracts from annual reports illustrate new developments, typhoon warning, etc. *Subject Headings:* **1. Meteorological observatories 2. History of observatories 3. Hong Kong.**—*C.E.P.B.*

6.1–44 551.501.9(98)

Sykes, Robert B., Jr., **Weather and life in the Arctic.** *New York Academy of Sciences, Transactions*, Ser. 2, 16(1):50–51, Nov. **1953.** (Abstract of illustrated lecture given Oct. 27, 1953.) **DLC**—Notes on life at Arctic weather stations operated jointly by U. S. Weather Bureau and Canadian agencies such as Royal Canadian Air Force and Air Transport Meteorological Service. The stations are at Resolute, Alert, Eureka, Isachsen and Mould Bay—all at 75°N or higher latitudes and were established during 1947–49 by the late C. J. Hubbard of the U. S. Weather Bureau. *Subject Headings:* **1. Arctic weather stations 2. Canadian Arctic.**—*M.R.*

6.1–45 551.501.9(988)

Wade, F. Alton, **Greenland inland ice weather stations.** (In: **Encyclopedia Arctica, Vol. 7, Meteorology and Oceanography** [unpub. ms., photostat, July **1951,** Pt. 11] diagrs.) **DWB**—Details of Wegener's 1930–31 Expedition, the British Arctic Air Route Expedition, 1930–31 and the U. S. Army Air Force Ice Cap Detachment, 1943–44 are given in narrative form in order to show the difficulties as well as the eventual feasability of establishing permanent weather stations on the Greenland Ice Cap. *Subject Headings:* **1. Arctic weather stations 2. Arctic expeditions 3. Greenland Ice Cap.**—*M.R.*

OBSERVATIONAL DATA

See also: **Rainfall stations** (Almeyda Arroyo), 6.1–261; **Rainfall data** (Ramakrishnan), 6.1–265; **Climatic data inventories** (U. S. W. B.), 6.1–299.

6.1–46 551.506(265)

*Arakawa, H. and Tsutsumi, K., **Weather in the NW-Pacific.** *Papers in Meteorology and Geophysics*, Tokyo, 4(1):17–34, April **1953.** numerous tables, 2 refs. **DWB**—An elaborate tabulation of frequencies of clear, partly cloudy, cloudy, overcast, rain, snow, fog, squalls, and visibility in 4 categories, plus the total number of observations for each 5° square of latitude and longitude in the NW and Central Pacific for Jan., April, July and Oct. based on marine data from Japanese Navy and merchant vessels. The limits of the area covered are 55°N to 15°S, and 100°E to 75°W. The period of record is not given, but it must be quite long as the number of observations in a given square sometimes exceeds 1000. *Subject Headings:* **1. Marine meteorological data 2. Northwest Pacific 3. Central Pacific.**—*M.R.*

6.1–47 551.506:551.577 551.508.77

*Helmers, Austin E. (*Ogden, Utah*), **Precipitation measurements on wind-swept slopes.** *American Geophysical Union, Transactions*, 35(3):471–474, June **1954.** 3 figs., 2 tables, refs. **MH-BH**—Precipitation catch for three calendar years is compared for four types of gage installation on a wind-swept path by (1) weighing-recording gage with the orifice and an Alter type wind shield sloped parallel to the ground surface, (2) unshielded nonrecording gage with orifice sloped parallel to the ground surface, (3) weighing-recording gage with horizontal orifice and Alter type wind shield, and (4) unshielded U. S. Weather Bureau standard gage with funnel removed was (1) 62.90, (2) 53.34, (3) 39.82, (4) 27.64 inches, respectively. In 1951 the respective catches were (1) 61.38, (2) 52.94, (3) 35.91 and (4) 25.67 inches; and in 1952 they were (1) 39.62, (2) 35.01, (3) 27.09, and (4) 15.91 inches. Indications are that gage (1) probably did not overestimate precipitation amounts and that there is a relationship between wind velocity and magnitude of differences in catch between gages. *Subject Headings:* **1. Precipitation measurements 2. Rain gages 3. Shielded rain gages 4. Rain gage comparisons 5. Wind effects.**—*Author's abstract.*

6.1–48 551.506.8:551.584

Kreeb, Karlheinz, **Phänologische Untersuchungen auf kleinem Raum.** [Small scale phenological investigations.] *Meteorologische Rundschau*, 7(5/6):95–100, May/June **1954.**

2. Spezieller Teil. [2. Special part.] *Ibid.*, 7(7/8):133–137, July/Aug. **1954.** 9 figs., 3 tables, 9 refs. **DWB**—1) Summary of a thesis describing a series of observations between Stuttgart, Neuhausen, Kirchheim and Plochingen. The technique is fully described. Mapping difficulties are illustrated by a sketch showing earlier blossoming on a loose road edge than in adjoining meadow. The effective local factors are height, exposition, soil humidity and soil type. These are illustrated by maps and sections over areas ranging from several km to a few meters across. 2) The technique of small scale phenological charting by means of relative dates is discussed. As examples for region S.E. of Stuttgart, between 250 and 480 m above M.S.L., charts show height contours, forests and exposition (microclimate). These are related to flowering of pear, cherry, apple, certain grasses and herbs. A scheme of letter symbols to be used as a basis of a colored chart of phenological zones is shown. *Subject Headings:* **1. Phenology 2. Microclimates.**—*C.E.P.B.*

6.1–49 551.506.8(438)

Molga, Marian, **Proba ustalenia czasutrwania orkesu vegetacji w woj. warszawskim na podstawie obserwacji fitofenologicznych z okresu 1948–1950.** [An attempt to determine the duration of the vegetative period in Warsaw province on the basis of phytophenological observations during the period 1948–1950.] *Poland. Państwowy Instytut Hydrologiczno-Meteorologiczny, Wiadomości Służby Hydrologicznje i Meteorologicznej*, 3(2):156–160, **1951.** 2 figs., table. **DWB**—Study based on phenological reports from more than 80 localities. The beginning of spring is determined by local recordings of the onset of active life in such plants as hazel nut trees, coltsfoot and marigold. The onset of autumn is characterized by the change of color and falling-off of chestnut and birch leaves. Two maps showing the beginning of spring and autumn in different zones of the province and a table showing the duration of the vegetative periods in different localities illustrate the work. *Subject Headings:* **1. Phenological observations 2. Warsaw, Poland.**—*A.M.P.*

6.1–50 551.506.1(714)

*Canada. Meteorological Div., **Annual meteorological summary for Dorval, Quebec for 1953.** [1954] 26 p. mostly tables. **DWB**—The station at the Montreal Airport, Dorval, Quebec, was opened in Sept. 1941. This annual report describes the history, location, instrumentation and weather each month during 1953. Tabular data for 1953 and for the whole period of record are included. Daily values and long term daily means of minimum and maximum temperature, daily precipitation and snow, and monthly total degree days and average wind speed for each month of record are among the quantities tabulated. *Subject Headings:* **1. Annual meteorological reports 2. Observational data 3. Dorval, Quebec.**—*M.R.*

6.1–51 551.506.1 (45)

*Istituto Geofisico Italiano, Milan. Stazione Meteorologica, **Riassunto, 1953.** [Résumé, 1953.] 4 p. entirely tables. Published jointly with the Istituto di Meteorologia e di Ecologia, Universitá de Milano. **DWB**—Standard type of monthly and annual summary of pressure, temperature, vapor pressure, relative humidity, cloudiness, precipitation, frequency of cloud types, weather, wind direction frequency (16 directions) and wind speed (hourly) based on 3 times daily (08, 14 and 19 h) observations wherever applicable. *Subject Headings:* **1. Annual climatic summaries 2. Observational data 3. Milan, Italy. I. Milan. Universitá. Istituto de Meteorologia e di Ecologia.**—*M.R.*

6.1–52 551:506.1:551.510.535:523.78(54)

Mitra, S. N. (*All-India Radio, New Delhi*), **Partial solar eclipse of 25 February 1952 and its effect on the ionosphere.** *Journal of Scientific and Industrial Research, Sec. A*, 12(7): 319–328, July **1953.** 6 figs., table. 7 refs. **DWB**—Ionospheric observations taken by the All-India Radio from Feb. 20 to March 1, 1952 at Delhi, Bombay, Madras, Tiruchirapalli and Nagpur, India, are reported. The observations comprised (1) vertical-incidence ionospheric measurements, (2) relative field intensity observations, (3) observations of fading and back scatter on pulsed transmissions at Delhi, (4) observations on pulsed transmissions emitted from England and (5) photographing the sun's disc at regular intervals. Graphs giving the

measured values are presented and discussed. *Subject Headings:* **1. Ionospheric data 2. Solar eclipses 3. India.**—*G.T.*

6.1–53 551.506.1(729)

*Netherlands West Indies. Dept. Sociale- en Economische Zaken, **Statistiek van de meteorologische waarnemingen in de Nederlandse Antillen over 1953.** [Statistics compiled by the meteorological service of the Netherlands Antilles for 1953.] **1954.** 16 p. diagr., mostly tables. In Dutch and English. **DWB**—After a description of the material contained in the several tables (in Dutch and English) the monthly and annual rainfall is given for 1953 for 13 stations in Curaçao. Averages are given for 1933–1952. Similar data are given for Bonaire, Aruba (8 stations), St. Maarten, St. Eustatius and Saba. Temperature, dew point and relative humidity data; wind direction and speed and cloudiness for Curaçao and, finally, 7 tables of hourly temperature, relative humidity, dew point, pressure, wind speed, direction and frequency of wind velocities by direction (36 points) are tabulated for Curaçao Airport (for the first time) for 1953. *Subject Headings:* **1. Annual meteorological reports 2. Climatic data 3. Airport climatic data 4. Curaçao 5. Netherlands West Indies.**—*M.R.*

6.1–54 551.506.5(491) 551.311.12(491)

Draper, L. and Leahy, C., **The University of Nottingham South-East Iceland Expedition 1953.** *Weather*, 9(9):259–271, Sept. **1954.** 3 figs., 3 photos., table, 2 refs. **MH-BH**—Draper describes journey to N.W. Oraefi, Vatnajökull. Base camp was reached July 3 and ice-camp at 4000 ft established July 13. A brief account of the glaciological work is included. The party returned to Reykjavik in mid-Aug. Unfortunately I. F. Harrison and A. Prosser were lost on the glacier. C. Leahy describes the instrumental setup and summarizes the weather and meteorological observations. *Subject Headings:* **1. Expeditionary climatic data 2. Glaciology 3. Iceland.**—*C.E.P.B.*

6.1–55 551.506.5(988)

Katz, H. R., **Journey across the Nunataks of Central East Greenland, 1951.** *Arctic*, 6(1):3–14, March **1953.** 11 figs., 9 refs. **DLC**—In an article describing and illustrating a geological expedition in the late summer of 1951, 2 pages are devoted to a description of climatic conditions encountered by the expedition, and the difference from normal. Weather and ice conditions were exceptionally bad so the usually thawed regions were frozen. Temperature, precipitation, cloud, wind and limit of permanent snow cover are mentioned. *Subject Headings:* **1. Expeditionary climatic data 2. Central East Greenland.**—*M.R.*

6.1–56 551.506.7(96)

*U. S. Army-Navy Joint Task Force One, **Aerological report on Operation Crossroads.** *U. S. Office of Naval Operations, OPNAV*-JTF-P1001, [**1947?**] 296 p. charts, mostly tables. **DWB**—A review of 4 months of forecasting experience for the Marshall Islands. The 19 surface, horizontal upper air, vertical upper air and climatological charts prepared for use in forecasting cloud types, amounts and heights, winds and temperatures to 60,000 ft, height of the tropopause and pressure altitudes are discussed individually. Tropical forecast techniques and special methods employed for forecasting winds and temperatures aloft, height of tropopause and true and pressure altitudes are described briefly. Surface weather charts for June 24, July 1, 19 and 25, 1946 show the shear lines, Equatorial Front (ICZ), easterly waves and typhoons in evidence in the Marshall Islands area preceding and on the atomic bomb test days. Extensive tables include surface, upper air and aircraft weather data for June and July, 1946. *Subject Headings:* **1. Equatorial meteorology 2. Intertropical convergence zone 3. Surface data 4. Upper air data 5. Weather forecasting 6. Marshall Islands.**—*M.P.K.*

6.1–57 551.506.8:634.11:551.584.3

Aichele, H., **Der Beginn der Apfelblüte 1953 am westlichen Bodensee als Hilfsmittel der kleinklimatischen Geländekartierung.** [Beginning of apple blossoming in 1953 on the western shores of Lake Constance as an aid in microclimatic regional mapping.] *Meteoro-*

logische Rundschau, 6(11/12):204–206, Nov./Dec. **1953.** 2 figs., 7 refs. **DWB**—Blossoming of "Schöner von Boscoop" apple began on low ground, steep SW slopes and slight NE slopes on April 21 in a period of warm days, but on damp level ground and high ground 150 m above lake not until early May. Dates are plotted in detail and show the dominant effects of local climatic differences. *Subject Headings:* **1. Apple trees 2. Phenology 3. Topographic effects.**—*C.E.P.B.*

INSTRUMENT CARRIERS

See also: **Rockets and upper atmos.** (Newell), 6.1–9; **Radar equipment** (Harrison, Post), 6.1–32; **Atmos. impurities** (Lugg, Wright), 6.1–116; **Atmos. insolation** (Rhode Island St. Coll.), 6.1–165; **Turbulence meas.** (Tolefson, others), 6.1–206; **Atmos. electricity meas.** (Demon, others), 6.1–341.

6.1–58 551.507.321:551.508.822:551.515.4(758)

*Beebe, Robert G. (*W. B. Airport Stat., Atlanta*), **Radiosonde flight into the leading edge of an unusually heavy thunderstorm.** U. S. Weather Bureau, Aug. **1951.** 5 p. 2 figs., tables. Photostat. **DWB**—Data obtained during two radiosonde ascents made at Atlanta Airport on July 26, 1951 are presented in tables and graphs and discussed in connection with the meteorological and balloon flight conditions before and after a severe thunderstorm. The first ascent began at 1015 EST, encountered the leading edge of the storm and was forced down in 3 stages, from 8300 ft to the ground. Both ascent and descent data are given. Rainfall between the two soundings amounted to 1.97″. Temperature and humidity were much lower on descent than ascent. The second ascent was begun at 1207 EST and was successful. *Subject Headings:* **1. Radiosonde ascents in thunderstorms 2. Balloon descents 3. Thunderstorm effects on balloons 4. Radiosonde data 5. Atlanta, Georgia.**—*M.R.*

6.1–59 551.507.362

Spencer, N. W.; Schulte, H. F. and Sicinski, H. S., **Rocket instrumentation for reliable upper atmosphere temperature determination.** *Institute of Radio Engineers, I.R.E. Proceedings*, 42(7):1104–1108, July **1954.** 6 figs., 4 refs. **DWB**—This paper describes briefly rocket-borne electronic equipment which has been developed and utilized in the determination of ambient atmospheric pressure and temperature. In the design of the equipment, emphasis has been placed on reliability of operation, and on the ability to produce data of significant accuracy. Typical resulting curves of ambient pressure and temperature are presented. *Subject Headings:* **1. Rocket instrumentation 2. Upper air temperatures 3. Upper air pressure.**—*Authors' abstract.*

6.1–60 551.507.321.2

***Comparative study of Philippine pilot balloon observations.** *Philippines. Weather Bureau, The Elements*, 3(8):9, Aug. **1952.** 2 tables. **DWB**—This comparison relates to the height score achieved at the four aerological stations Cebu, Laoag, Surigao and Zamboanga during the period 1948–1952. Numbers of flights (expressed in absolute figures and in percentage of total flights) are tabulated for each level reached between 5000 and 35,000 ft at 5000-foot intervals. *Subject Headings:* **1. Pilot balloons 2. Balloon performance 3. Philippine Islands.**—*G.T.*

6.1–61 551.507.321.2

Mathur, L. S., **Low pressure portable hydrogen generator for pilot balloon observatories.** *India. Meteorological Dept., Scientific Notes*, 9(114):161–165, **1946.** 4 figs. **DWB**—The paper describes a silicol-soda type low-pressure hydrogen generator suitable for use at pilot balloon observatories. A small scrubber is used to take unit charges of 80 gms of ferrosilicon, producing about 2.7 cu ft of hydrogen at a time. A table gives the number of charges of ferrosilicon and caustic soda required for various types of pilot balloons. Special precautions necessary in the use of the generator are mentioned. *Subject Headings:* **1. Hydrogen generators 2. Pilot balloons.**—*Author's abstract.*

6.1–62 551.507.362:551.510.535:551.594.12/3

Seddon, J. Carl (*U. S. Naval Res. Lab., Wash., D. C.*), **Propagation measurements in the ionosphere with the aid of rockets.** *Journal of Geophysical Research*, Wash., D. C., 58(3):323–335, Sept. **1953.** 10 figs., 7 refs., 11 eqs. **DWB**—Daytime measurements of electron density, ion density, electron collision frequency, and earth's magnetic field in the ionosphere were made during V-2 rocket flights at the White Sands Proving Ground, New Mexico. Two CW harmonically related frequencies were radiated from the rocket to two ground stations to obtain measurements of the ordinary and extraordinary indices of refraction in the region around the rocket. The results for one flight show an ion layer with a maximum of 5×10^5 ions/cc and a small electron layer with a maximum of 7500 el/cc just below the E1-layer. On a Sept. day the F1-layer remained dense up to the E2-layer, while on a Jan. day the density apparently decreased above the F1-layer maximum to much lower values. It is shown that the Lorentz polarization term should not be used in the E-layer at 4 Mc. *Subject Headings:* **1. Rocket observations 2. Ionospheric wave propagation 3. Electron density 4. Ion density.** —*Author's abstract.*

INSTRUMENTS

See also: **Precip. measurement** (Helmers), 6.1–47; **Radiosonde ascents in thunderstorms** (Beebe), 6.1–58; **Radiation climate** (Dogniaux), 6.1–161; **Atmos. insolation** (Rhode Island. St. Coll.), 6.1–165; **Turbulence meas.** (Tolefson, others), 6.1–206; **Atmos. electricity meas.** (Demon, others), 6.1–341.

6.1–63 551.508

Casella, C. F. & Co., Ltd., London, **Impulse recorder to record rates of flow and movement.** *Casella, C. F. & Co., Leaflet*, 769, [Oct. **1951?**] [4 p.] illus. **DWB**—A commercial pamphlet containing a photograph and brief description of "a multipurpose recorder capable of receiving electrical impulses from many types of transmitters and not only recording them individually but also presenting them in the form of a rate." The use of the apparatus in conjunction with an anemometer is explained as an example of its application and a record thus obtained is reproduced. Designer of the recorder is J. R. BIBBY of the Meteorological Office, London. A price list for the instrument (£85) and extra parts is attached. *Subject Heading:* **1. Impulse recorders.**—*G.T.*

6.1–64 551.508

Hill, Richard S. (*Univ. of Rhode Island*), **An automatic data recording camera.** *Review of Scientific Instruments*, 24(10):1001–1002, Oct. **1953.** 2 figs. **DWB**—Technical details and characteristics of equipment consisting of a shutterless camera and a flash unit are described and illustrated. Designed for operation with high-altitude plastic balloons, the apparatus is capable of functioning at reduced pressure and over a wide range of temperature, unaffected by considerable acceleration. The instrument weighs 19 lb including equipment for 12 hours of operation. Low power consumption and versatility compensate for the disadvantage arising from the necessity of using the camera in a dark enclosure only. The mechanism will record any variety of measuring instruments at regular intervals. *Subject Headings:* **1. Recording equipment 2. Air-borne instruments.**—*G.T.*

6.1–65 551.508

Lauscher, F., **Neuere internationale Vorschläge für meteorologische Instrumente und Beobachtungspraxis.** [New international proposals for meteorological instruments and observation techniques.] *Wetter und Leben*, 5(8–10):174–183, Nov. **1953.** table. **MH-BH**—The Austrian devices for estimating measuring and calculating the values of the various meteorological variable are compared with those presented by the **Guide to international meteorological instrument and observing practice,** I.M.O. Publ. No. 78, 1950. The comparison covers barometric readings, temperature, relative humidity, wind, precipitation cloudiness and visibility. *Subject Headings:* **1. Instrument comparisons 2. Meteorological instruments.**—*I.L.D.*

6.1–66 551.508(083.8)

Negretti & Zambra, London, **Meteorological instruments.** Its *List M4.* **1950.** 100 p. photos., diagrs. **DWB**—The instruments described and illustrated in this revised catalog are mostly as specified by the Meteorological Office of the United Kingdom, although they are used in many countries. Anemometers, wind vanes, anemographs, towers, barometers, barographs, rain gages, evaporation gages, sunshine recorders, nephoscopes, thermometers, hygrometers, shelters, combinations of the above and calibration equipment are among the instruments shown. Prices are given for many of the instruments. *Subject Headings:* **1. Meteorological instruments 2. Instrument catalogs.**—*M.R.*

6.1–67 551.508(02):061.4:681

35th Physical Society exhibition. *Meteorological Magazine,* 80(949):202–203, July **1951.** 2 photos. 4 refs. **DWB.** Also: Physical Society of London, **Handbook of scientific instruments and apparatus 1954, published in connection with 38th Physical Society Exhibition, 8th–13th April 1954.** London, **1954.** 6+201 p. numerous figs. **GB-MO**—1) Brief descriptions of a number of new meteorological instruments. Photos show a new wind direction recorder using a single pen. 2) A catalog describing, often with photographs, exhibits by a number of firms and official establishments. The catalog is arranged under exhibitors but there is an adequate index. A few of the instruments such as light meter, radarsonde element and thermometers have meteorological interest. *Subject Headings:* **1. Meteorological instruments 2. Exhibitions.**—*C.E.P.B.*

6.1–68 681 551.508

Tucker, M. J., **The effect of pen-to-paper friction in recording instruments.** *Electronic Engineering,* 23:61–63, Feb. **1951.** 6 figs, 2 refs, 6 eqs. Included in: *National Institute of Oceanography, Cambridge, Collected Reprints,* 1(23), **1953. GB-MO**—Static friction varies by up to 60%, most of the variation resulting from the differing inclination of the pen. Friction can be eliminated by a very slight vibration, or by running the paper fast. The frictional forces are set out in equations from which the speed of run necessary to reduce frictional error below a given value can be evaluated. *Subject Heading:* **1. Instrument errors.**—*C.E.P.B.*

6.1–69 551.508.21

Albrecht, F., **Das Impulsaktinometer.** [The impulse actinometer.] *Geofisica Pura e Applicata,* 26:153–171, **1953.** 12 figs., table, 10 refs. In German; German and English summaries p. 153. **MH-BH**—The pulse-actinometer works with bolometers, i.e., with Wheatstone's bridge circuits. The principle of operation of this actinometer is based upon an overloading of those bolometers with a relatively high current. Obviously such a high current can be connected only for a brief period, which, however, has to be sufficiently long for reading the deflection of the galvanometer. This principle makes it possible to use relatively insensitive galvanometers of small size so that they may be built into the case surrounding the whole instrument. The actinometer uses ordinary radio components and its construction is extremely simple and should not present any difficulties. The instrument has been used successfully on various expeditions. The apparatus contains four different actinometer systems for different spectral ranges. The design of the instrument, its properties as bolometers, diaphragms, galvanometer, filters, circuit diagram, and its operation are treated. Furthermore, a theory of the temperature coefficient is given and the final adjustment is described in detail. The calibration of the instrument with the Linke-Feussner actinometer resulted in a deviation of ±13%, which can be explained by the difference in the operating procedures of both instruments. *Subject Headings:* **1. Actinometers 2. Bolometers.**—*Author's abstract.*

6.1–70 551.508.21

Courvoisier, P., **Zur Definition der Sonnenstrahlung. Beiträge zur Strahlungsmessmethodik, IV.** [On the definition of solar radiation. Contributions to radiation measurement technique, IV.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 5(2):125–145, **1954.** 35 refs. German, English and French summaries p. 125. **DLC**—After a brief discus-

sion of the problem of measuring solar radiation, K. WEGENER's argument, that the radiation from the receiving surface of a pyrheliometer or actinometer is ignored, is discussed at great length and shown to be fallacious, the corrections applied being of the right order. Also, WEGENER's correction would lead to physically untenable results, e.g., about turbidity. But the discussion shows that actinometer measurements need further consideration. "Solar radiation intensity" is defined as the radiation measured by an actinometer or pyrheliometer with normal tube, corrected for the (small) balance of infrared radiation but including circumsolar sky radiation. The true solar radiation cannot be known exactly. Several other points raised by WEGENER are discussed. *Subject Heading:* **1. Radiation measurement.**—*C.E.P.B.*

6.1–71 551.508.21

Fowler, J. R. (*Canadian Met. Serv., Toronto*), **An improved bimetallic actinograph.** *American Meteorological Society, Bulletin*, 34(4):170–174, April **1953.** 3 figs., 2 refs. **MH-BH**—The Eppley pyrheliometer is used at a number of solar radiation stations in Canada as well as in the U.S.A. and Alaska. In order to have a denser network of such stations in Canada it was necessary to develop a cheaper instrument, which at the same time was durable and comparable to the Eppley with respect to accuracy, etc. The Füss-Robitzsch bimetallic actinograph differs from the Eppley by as much as 15% or even more. The Type G actinograph developed by the Instrument Services of the Canadian Meteorological Division calibrates with the Eppley to ±5%, even considering errors of the Eppley instrument, recorder, scaling errors and purely instrumental errors of the Type G actinograph. A new chart scale was developed, which is graduated in terms of radiation intensity during periods of fairly constant radiation. *Subject Headings:* **1. Actinographs 2. Bimetallic actinographs 3. Eppley pyrheliometer 4. Canadian radiation network.**—*M.R.*

6.1–72 551.508.21

Hoover, W. H. and Froiland, A. G. (*Astrophysical Obs., Smithsonian Inst.*), **Silver-disk pyrheliometry.** *Smithsonian Miscellaneous Collections*, 122(5), Aug. 4, **1953.** 10 p. plate, table, foot-refs. *Smithsonian Institution, Publication*, 4136, **1953. DLC**—Results of comparisons of silver disk pyrheliometer SI5bis with water flow pyrheliometer in 1931–34 and 1947 are summarized. New comparisons in 1952 gave a mean constant of 0.3622. The differences 1932–52 are within the limits of error and show that the scale of 1913 is nearly 2.5% too high. Other tests on the working of the instrument are described. *Subject Headings:* **1. Pyrheliometers 2. Silver disk pyrheliometer.**—*C.E.P.B.*

6.1–73 551.508.21

Mönch, G. C., Wichert, G. and Böttger, O., **Experimentelle Untersuchungen am Wismutbolometer und theoretische Auslegungen der Ergebnisse.** [Experimental investigations with the bismuth bolometer and theoretical interpretation of the results.] *Annalen der Physik*, Leipzig, 6 Ser., 12(4/6):183–221, **1953.** 52 figs., 5 tables, 37 refs., 44 eqs. **DLC**—After a discussion of the theoretical basis of bolometry, a bolometer is described making use of bismuth vapor condensed in a vacuum on celluloid film. The characteristics of the instrument are given and compared with those of other instruments. *Subject Heading:* **1. Bolometers.**—*C.E.P.B.*

6.1–74 551.508.21:551.521.61

Stern, Sidney C. and Schwartzmann, Frederick, **An infrared detector for measurement of the back radiation from the sky.** *Journal of Meteorology*, 11(2):121–129, April **1954.** 7 figs., 5 tables, 30 refs., 17 eqs. **MH-BH**—The instrument consists of an infrared hemispherical window of thallium bromoiodide, a sensitive thermocouple, temperature controlled housing, a high speed photoelectric potentiometer recorder and a plexiglass hemispherical window opaque to all radiation $>3.5\mu$ for computing back radiation from the sky during day. Calibration is described. Observations show good agreement with theoretical values. An appendix discusses determination of energy exchange at the black body. *Subject Heading:* **1. Infrared radiation meters.**—*C.E.P.B.*

6.1–75 551.508.23

Foster, Norman B. and Fosket, Laurence W. (*U. S. W. B., Instrument Div., Wash., D. C.*), **A photoelectric sunshine recorder.** *American Meteorological Society, Bulletin*, 34(5): 212–215, May **1953.** 4 figs., 5 refs. **MH-BH**—The authors discuss the operation and deficiencies of the Maring-Marvin thermometric sunshine recorder, the Campbell-Stokes recorder and other types of recorders. They then describe the sunshine switch developed by the U. S. Weather Bureau, which can follow the appearance and disappearance of the sun's disk with considerable accuracy. Photographs of the switch and of the component parts, the electrical circuit diagram of the switch and a simple record are given. *Subject Heading:* **1. Sunshine recorders.**—*I.L.D.*

6.1–76 551.508.43:551.508.882

Rouaud, A., **Étude theorique de l'isolement thermique de l'equipement d'une radiosonde.** [Theoretical study of thermal insulation of a radiosonde device.] *Journal Scientifique de la Météorologie*, Paris, 5(18):57–74, April/June **1953.** 7 figs., 3 refs., 25 eqs. French, English and Spanish summaries p. 57. **DWB**—A detailed theoretical and empirical study of the various thermal factors affecting the temperature error of radiosonde pressure capsules, with a view toward eliminating these errors by proper insulation. Influence of rate of ascent of balloon, of vertical temperature gradient and of heat sources (such as radio tubes) are considered. The most important source of error, however, is the ground temperature and the ambient temperature in flight. The former can be reduced by a 40–60 min adjustment period before release. Various correction curves are presented for ambient temperature errors under various conditions. *Subject Headings:* **1. Radiosonde errors 2. Aneroid capsule errors 3. Temperature corrections on aneroids.**—*M.R.*

6.1–77 551.508.49

Lottermoser, W., **Ein Gerät zur Messung von atmosphärischen Druckschwankungen im Bereich 0.01 bis 20 Hertz.** [An instrument for measuring pressure variations in the range 0.01 to 20 hz.] *Annalen der Meteorologie*, 6(3/4):115–116, **1953/54.** 2 figs., 2 refs. **MH-BH**—The electric microbarometer of J. V. Atanasoff (1948), which is being installed at Tübingen, works on the principle of a condenser microphone, in which the resonance of the diaphragm lies within the band to be investigated. The parts are listed and calibration described. *Subject Heading:* **1. Microbarographs.**—*C.E.P.B.*

6.1–78 551.508.59:551.551

Parson, D., Jr. and Bunker, A. F. (*Woods Hole Oceanographic Inst., Woods Hole, Mass.*), **A recording computer for the direct measurement of the turbulent heat exchange in the atmosphere.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:369–379, Dec. **1952.** figs., table, 4 refs., 6 eqs. **DWB**—The heat exchange through a horizontal surface is determined directly by an instrument, measuring vertical velocity and temperature deviations and multiplying them electronically according to the basic equation of exchange. A ball disc integrator is used for the summation of heat flow values over any given period. Circuit schemes and block diagrams are presented. The computed heat flow agrees fairly well with results of airplane soundings. A vertical velocity-temperature diagram shows wide scattering without any correlation. *Subject Headings:* **1. Turbulent exchange measurements 2. Heat exchange 3. Computing devices.**—*A.A.*

6.1–79 551.508.71

De Witt, C. T., **An oscillating psychrometer for micro-meteorological purposes.** *Applied Scientific Research, Hague, Sec. A*, 4(2):120–126, **1953.** 4 figs., table, 5 refs., 5 eqs. **DLC**—A psychrometer is described which is adequately ventilated by oscillating the dry and wet thermocouples with an amplitude of about 1.5 cm and a frequency of about 40 hz. The temperature and humidity profile is destroyed to a far less extent with this meter than with psychrometers ventilated in the ordinary way. It has been shown that the true vapor pressure of the air is measured by means of an irradiated psychrometer if the dimensions and the reflection coefficients of the dry and wet bulbs are the same. *Subject Heading:* **1. Psychrometers.**—*Author's abstract.*

6.1–80 551.508.71

Skeib, Günter, **Über die instationären Einstellvorgänge am Assmann-Psychrometer.** [Unsteady adjustment processes on the Assmann psychrometer.] *Zeitschrift für Meteorologie*, Berlin, 7(9):268–274, Sept. **1953.** 3 figs., 3 tables, 2 refs. **MH-BH**—Proposes to use a wet bulb thermometer with a greater lag than the lag of the dry bulb in order to avoid errors in the determination of the psychrometric difference in the case of microvariations in temperature. The necessary equations for the lag determination are derived and a few cases of errors originating from sudden temperature changes (maximum error 0.25 mm) or sine form temperature variations (max. error 0.15 mm) are discussed. The lag constant is a function of the wet bulb temperature itself. Compensation methods for micrometeorological measurements are proposed. *Subject Headings:* **1. Psychrometer errors 2. Assmann psychrometer.**—*A.A.*

6.1–81 551.508.824 620.19

U. S. Air Weather Service, **(U) report on Project Red Fang: a test of operational utility of the Amchitka Automatic Weather Station.** Its *Technical Report*, No. 105–111, May **1953.** 20 p. 2 tables. **DWB**—A field test was made on Amchitka Island (Aleutians), Alaska with reception at Shemya during the year Jan. 1–Dec. 31, 1952 to see how an automatic weather station (Signal Corps type) would perform under severe conditions of wind and temperature and exposure to salt sea spray. The reception varied from month to month, but was >50% and in May 86%. Several breakdowns occurred which rendered equipment inoperative for from 5 days to >1 month. The corrosion of metal (especially wind vanes and bearings) and breakdown of power or generators were the most serious defects. Statistical data on operation of various elements, as well as description of maintenance and repair problems are provided in report. *Subject Headings:* **1. Automatic weather stations 2. Corrosion of meteorological instruments 3. Sea salt corrosion 4. Amchitka Island, Aleutians 5. Shemya, Alaska.**—*M.R.*

6.1–82 551.508.91

Bitterli, H. and Verzár, F., **Erfahrungen mit dem automatischen Kondensationskernzähler.** [Experiences with the automatic condensation nuclei counter.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 6(2):211–217, Dec. **1953.** 6 figs., 3 refs. German, English and French summaries p. 211. **DLC**—Experiments are set out with the automatic counter described by VERZÁR (Arch. Met. Geoph. Biokl. A, 5:372–376, 1953; *see* 4.7–40, July 1953, *MAB*). Points discussed are: Calibration of galvanometer deflection in nuclei/cc and its control, effect of unequal pressure decrease, and temperature and humidity in the chamber. *Subject Heading:* **1. Condensation nuclei counters.**—*C.E.P.B.*

6.1–83 551.508.91

Holl, W. and Mühleisen, R., **Ein Kondensationskernzähler mit kontinuierliche Übersättigung.** [A condensation nuclei counter with continuous supersaturation.] *Naturwissenschaften*, 41(13):300–301, July **1954.** 2 figs., 9 refs. **DWB**—The apparatus, shown in a diagram, makes use of the property that air saturated with respect to water is supersaturated with respect to HCl. The density of the resulting fog is measured by two photocells, one illuminated directly and the other by light passing twice through the fog chamber. The resulting current is recorded after amplification. A specimen record is shown. *Subject Heading:* **1. Condensation nuclei counters.**—*C.E.P.B.*

6.1–84 551.508.91:546.33

Vonnegut, Bernard and Neubauer, Raymond L. (*Gen. Elec. Res. Lab., Schenectady, N. Y.*), **Counting sodium-containing particles in the atmosphere by their spectral emission in a hydrogen flame.** *American Meteorological Society, Bulletin*, 34(4):163–169, April **1953.** 8 figs., foot-refs. **MH-BH**—An apparatus, similar to one devised by SOUDAIN, for counting large Na containing particles as they enter a hydrogen flame, is described in detail and illustrated. Continuous observations made over a period of seven months show that the concentration of large Na containing particles in the atmosphere is subject to large fluctuations. No consistent relationship has been found between the periods of high and low concentrations and prevailing meteorological conditions, but when concentration of Na particles is high the changes in concentration are usually accompanied by similar changes in condensation

nuclei concentration. Usually concentration is low on Sunday. High concentrations coincide with heavy traffic on nearby dusty roads. Thus human activity or dust storms as well as ocean spray can serve as sources of particles counted in this way. *Subject Headings:* **1. Nuclei counters 2. Sodium particle counters.**—*M.R.*

6.1–85 551.508.94

Gunn, Ross, **Electric field meters.** *Review of Scientific Instruments*, 25(5):432–437, May **1954.** 3 figs., 3 refs., 7 eqs. **DWB**—The fundamental principles of electric field measurement by the use of inductors and vacuum tube amplifiers are reviewed. An electric field meter is described that employs a rotating inductor and a synchronous ac generator to provide a sign responsive meter reading proportional to the electric field. The synchronized circuits eliminate moving contact rectifiers and promote calibration stability. A simplified field meter using rectified inductor currents to operate a high-impedance push-pull bridge circuit is also described. Design features are incorporated in both instruments that permit them to operate continuously under unusually severe storm conditions. *Subject Heading:* **1. Electric field meters.**—*Author's abstract.*

6.1–86 551.508.94

Smith, L. G., **An electric field meter with extended frequency range.** *Review of Scientific Instruments*, 25(5):510–513, May **1954.** 7 figs., 3 refs. **DWB**—The frequency range of a field meter of the field mill type has been extended by applying a system of balanced modulation. This is achieved by incorporating two complementary sets of stators. The amplified signals from the stators are detected in clamping circuit. In the instrument which is described, the frequency range extends to 22 kcps although the modulation frequency is 120 cps. The method by which the frequency range has been extended can be adapted to other instruments employing mechanical modulation. *Subject Heading:* **1. Electric field meters.**—*Author's abstract.*

SYNOPTIC ANALYSIS AND FORECASTING

See also: **Met. networks** (Schumann), 6.1–42; **Upper air analysis** (Jordan), 6.1–144; **Synoptic studies** (Freeman, Marcus), 6.1–156.

6.1–87 551.509.5

Vernon, Edward M. (*U. S. W. B., San Bruno, Calif.*), **A new concept of skill score for rating quantitative forecasts.** *Monthly Weather Review*, 81(10):326–329, Oct. **1953.** 4 tables, ref., 9 eqs. **DWB**—Skill scores for quantitative forecasts are proposed to take into account the deviations occurring between forecast and observed values. One score, the "deviation" skill score, weighs the forecasts linearly according to the deviation; a second score, the "quadratic" skill score, weighs them according to the square of the deviation. These two scores are compared with the conventional skill score for two sets of forecasts, and for the same forecasts with bias introduced. It is concluded that use of either the deviation or the quadratic skill score is preferable to use of the conventional skill score in rating quantitative forecasts. Examples of the step-by-step computations of the two new scores are given. *Subject Heading:* **1. Forecasting skill.**—*Author's abstract.*

6.1–88 551.509.312

Porter, Elizabeth M., **Thicknesses of the standard isobaric layers.** *New Zealand. Meteorological Office, Technical Note*, No. 107, Dec. 23, **1953.** unpaged. graphs. Mimeo. **DWB**—Frequency distributions of the thicknesses of the standard isobaric layers have been prepared for the Australia-New Zealand region. Charts are presented showing isolines of the median values of thickness for the 1000–700, 700–500, and 500–300 mb layers in the months of Jan., April, July and Oct., together with plotted values for the 5, 25, 75, and 95 percentile limits. *Subject Heading:* **1. Isobaric charts.**—*Author's abstract.*

6.1–89 551.509.312

Wippermann, F., **Zur Frage der Anwendung numerischer Prognosenmethoden auf zeitlich gemittelte Felder.** [On the application of numerical forecasting methods to fields

averaged over time.] *Meteorologische Rundschau*, 7(7/8):123–124, July/Aug. **1954.** 6 figs. 4 refs., 6 eqs. English summary p. 123. **DWB**—By applying numerical calculation to fields averaged over time or space a smoothed time development can be found, but it is necessary to take account of the divergence of the macroturbulent field. The method is set out with the example of the 10-day Northern Hemisphere 500 mb chart for April 11–20, 1953. By calculating the change to April 14–23, a 3-day forecast was obtained which had a correlation of 0.5 with the observed development. *Subject Heading:* **1. Numerical forecasting.**—*C.E.P.B.*

6.1–90 551.509.33:551.589:551.524

Böer, Wolfgang, **Über den Zusammnehang zwischen Grosswetterlagen und extremen Abweichungen der Monatsmitteltemperaturen.** [The relationship between large scale weather conditions and extreme deviation of monthly mean temperatures.] *Zeitschrift für Meteorologie*, 8(1):11–16, Jan. **1954.** 3 figs., table, 11 refs. **MH-BH**—The effect of large scale weather upon air temperature is studied by determining the frequency of individual large scale weather situations during months which were 1 σ colder or warmer than the mean monthly temperature of the stations Putbus, Erfurt, Jena, Halle, Leipzig, etc. (1881–1952) and Potsdam (1893–1952), etc. The predictive value of any relationship between large scale weather situations and mean monthly temperature is reduced owing to the lack of a clear cut conjunction of large scale weather situation and mean monthly temperature and insufficient statistical validity of frequency disturbances. On the basis of the differences of relative frequencies of individual large scale weather situations in months with extreme temperature deviations there are established 6 types of temperature effects exerted by large scale weather situations. *Subject Headings:* **1. Large scale weather processes 2. Extreme temperature deviations 3. Germany.**—*I.L.D.*

6.1–91 551.509.33:551.524.35

Dorsey, Herbert G., Jr., **Outlooks for New England winters.** *American Meteorological Society, Bulletin*, 35(3):129, March **1954.** **MH-BH**—A note in support of the author's belief in extra-terrestrial influences on Arctic circulation patterns and specifically on the New England winter temperature anomaly. Outlooks prepared by the author in this connection, using BAUR's (1951) anomaly data, correlated graphically with sunspot data, led the author to predict above normal winters for 1947–1953, below normal for 1953–54, near normal for 1954–55, severe cold in 1955–56 and average in 1956–57. The author found on return from T-3 ice island in April 1953 that the previous winter has been warm, verifying his outlook in contrast to BAUR's indication of the opposite tendency for that winter. *Subject Headings:* **1. Long range forecasting 2. Winter temperature anomalies 3. Solar effects 4. New England. I. Baur, F.**—*M.R.*

6.1–92 551.509.5:551.311.182:627.17(285:7)

Oak, W. W. and Myers, H. Y. (*U. S. W. B., Detroit*), **Ice reporting on the Great Lakes.** *Weatherwise*, 6(1):7–10, Feb. **1953.** illus. **MH-BH**—General ice conditions of the Great Lakes are discussed. Maximum ice thickness measured at close of winter ranges from 17 to 41 in. at various places. Ice forms referred to in ice reports (hard blue ice, snow ice, honeycombed, slush ice, etc.) are defined. The ice reporting service, which is organized on a cooperative basis, is described. Data on opening dates and on preceding February's mean temperature are presented in tabular and graphical form. They were taken from studies of some 50 years of records conducted at the Detroit Weather Bureau Office. The data are used for determining the time when the lakes will become free for navigation. Errors involved in such predictions are evaluated. March 1 is found to be the date when the predictions can be made with sufficient accuracy. *Subject Headings:* **1. Ice forecasting 2. Lake ice 3. Great Lakes.**—*G.T.*

6.1–93 551.509.52:551.515.2

Masuda, Y.; Takeuchi, M. and Hashimoto, M., **On the forecasting of the movement of typhoon.** *Papers in Meteorology and Geophysics*, Tokyo, 3(4):246–251, March **1953.** 4 figs., 8 refs. Also in: *Journal of Meteorological Research*, Tokyo, 5(7):605–608, Aug. **1953.** **MH-**

BH—From the results of streamline analyses of typhoons it is found that the point which corresponds to SCHERHAG's "delta" appears in the direction of the movement of a typhoon and approaches the typhoon center with height. It is shown that the direction from the typhoon center to this delta point agrees with the direction of a steering current and that the typhoon moves along this direction. *Subject Headings:* **1. Typhoon tracks 2. Typhoon forecasting.**—*Authors' abstract.*

6.1–94 551.509.5:551.515.2

Reese, Al and Spann, Robert E., **When the big winds blow (Pts. 1, 2).** *World Oil*, Houston, Texas, 136(7):48–52, June **1953;** 137(1):68–70, July **1953.** figs., tables, photos. **DLC**—"The tropical storm that puffs and bluffs around the Gulf" will often cause a loss of millions through unnecessary or premature shutdown of oil installations. This article deals with the U. S. Weather Bureau Hurricane Warning Service, describing its set-up, equipment and methods. The major part of the paper is devoted to storm detection by means of the extensive radar network maintained in the Gulf region by the U. S. Weather Bureau and several research or commercial organizations. Scientific and technical aspects of radar storm detection are discussed and illustrated. The operation of the radar storm warning service provided by A. H. Glenn & Associates of New Orleans (serving 10 operators) is described. *Subject Headings:* **1. Hurricane warning networks 2. Hurricane tracking 3. Gulf of Mexico.**—*G.T.*

6.1–95 551.509.5:551.515.2(265)

Rodewald, Martin, **Taifun-Warnungen im Nordpazifik.** [Typhoon warnings in the North Pacific.] *Wetterlotse*, 70:81–86, May **1954. DLC**—Account of typhoon warnings issued by navy stations at Guam and Stanley Point. The precision of the statements of position of center, track, forecast position and limits of storm zone are very valuable to shipping. *Subject Headings.* **1. Typhoon warning service 2. North Pacific.**—*C.E.P.B.*

6.1–96 551.509.52:551.515.2

Tanabe, S., **Typhoon forecast by using the intensity change of Bonin High.** *Journal of Meteorological Research*, Tokyo, 4(9):593–594, Feb. **1953.** 3 figs., table. In Japanese; English summary p. (37). **MH-BH**—The author works out a method for extended forecasting of the movement of typhoons by estimating the change of intensity of the Bonin anticyclone in the summer season. The movement of typhoons is mainly under the influence of the steering of the general current in the field. In actual operation it is useful to determine to some extent the direction of movement of a typhoon when it approaches 20°N. Experience proves that typhoons are likely to move north or northwest depending on whether the Bonin High is becoming weak or strong. By means of a periodogram analysis of the pressure change over the Bonin Islands from May to Sept., the author identifies a remarkable periodic variation of 9 days. *Subject Headings:* **1. Typhoon forecasting 2. Extended forecasting.**—*Author's abstract.*

6.1–97 551.509.52:551.515.2

U. S. Bureau of Aeronautics (Navy), **Improved hurricane and typhoon forecasting techniques.** Project AROWA (TED-UNL-MA-501.12), Contract N189s-87508, First Progress Report, July 1–Dec. 31, **1952.** 8 p. **DWB**—General account of activity and intentions comprising a literature review concerning forecasting, development of radar balloons and radar photographs. No results or data presented in this first report. *Subject Headings:* **1. Hurricane forecasting 2. Typhoon forecasting 3. Radar balloons 4. Radar photographs. I. General Mills, Inc. II. Contract N189s-87508 III. Project AROWA (TED-UNL-MA-501.12).**—*A.A.*

6.1–98 551.509.5:551.515.3

Tornado predicting. *Science News Letter*, 63(25):377, June 20, **1953. DWB**—A research project carried out in the Midwest by U. S. Weather Bureau is discussed. The project is aimed at establishing a dense network of barometric stations serviced by voluntary observers

who would report pressure jumps. Pressure jumps, the note explains, are believed to be the "triggering mechanism which sets off the tornadoes and other storms." *Subject Headings:* **1. Tornado forecasting 2. Tornado warning network 3. Pressure jump 4. U. S. Weather Bureau.**—*G.T.*

6.1–99 551.509.5:551.515.4

Fawbush, Ernest J. and Miller, Robert C., **A basis for forecasting peak and wind gusts in nonfrontal thunderstorms.** *American Meteorological Society, Bulletin,* 35(1):14–19, Jan. **1954.** 6 figs., 4 refs. **MH-BH**—An excellent relationship was found (in 62 cases of nonfrontal thunderstorms reported at Air Weather Service Stations) between peak gusts and difference in temperature, between surface temperature in advance of and "downrush" temperature or the surface temperature in the thunderstorm (which can be calculated by projecting the wet bulb temperature at the freezing level along the saturation adiabat to surface pressure). The regression curve shows a better fit for very high speeds (>65 knots) than for lower speeds. Examples of application of this formula or curve (peak gust $=7+3.06\,t-0.0073\,t^2-0.000284\,t^3$ where t is temperature difference) to situations in Iowa, Kansas and Oklahoma during 1952 are analyzed and illustrated. One further condition for strong gusts is a wet bulb 0°C at <11,000 ft above the surface. The standard error of estimate is 8 knots. *Subject Headings:* **1. Thunderstorm forecasting 2. Objective forecasting aids 3. Great Plains States.**—*M.R.*

6.1–100 551.509.5:551.515.4:551.515.8(54)

§Ramaswamy, C. and Bose, B. L. (*Calcutta Airport*), **On the importance of the mid- and upper tropospheric thermal systems in the development of weather in north-east India and eastern Pakistan during the nor'wester season.** *Current Science,* 22(10):291–294, Oct. **1953.** 4 figs., 5 refs. **DLC**—Charts of thermal winds and thickness lines for several situations in India during May 1953 reveal the fact that cold pools at the 500 or 300 mb level usually precede or accompany widespread thunderstorm development over India and East Pakistan and West Bengal and that warm ridges at 500 mb level are unfavorable and at the 300 mb level above a cold trough at 500 mb inhibit the development of thunderstorms. A confluent thermal jet seemed to increase thunderstorm activity. About 70% of 438 thunderstorms which occurred in N.E. India and E. Pakistan in May 1953 occurred east of the thermal trough line, and 30% to the west of this line. *Subject Headings:* **1. Thunderstorm forecasting 2. Cold vortexes 3. Thickness charts (300–500 mb) 4. India 5. East Pakistan.**—*M.R.*

6.1–101 551.509.52:551.555.6

*§Storr, D. (*Edmonton Forecast Office*), **An investigation into means of forecasting blizzards on the Western Prairies.** *Canada. Meteorological Div., Cir.* 2278, Tec. 145, April 22, **1953.** 17 p. 14 figs., 2 tables, 9 refs. **DWB**—A blizzard is rigidly defined for the purpose of this synoptic-climatological study and for forecast verification and forecast terminology. The wind must be 25 mph or more, visibility ½ mile or less and temperature expected to fall below 10°F; these conditions to persist for 6 hours or more. Some leeway is naturally allowed since exposure of stations varied and all 3 conditions seldom occur immediately at the same time. Maps for the Alberta-Saskatchewan region for 1945–1952 were classified according to 6 synoptic types—depending mainly on path of low across area. The general synoptic situation for each type, accompanying weather in each region and sample situations with resulting blizzard conditions and frequency data for 12 stations, forecast notes, etc. are presented. *Subject Headings:* **1. Blizzard forecasting 2. Blizzard frequencies 3. Canadian Prairies.**—*M.R.*

6.1–102 551.509.51:551.575.5

Schneider, Raymond (*Swiss Met. Service, Kloten Airport*), **La prévision du brouillard de rayonnement et la baisse nocturne de température.** [Forecasting of radiation fog and of night minimum temperature.] *Schweizerische Naturforschende Gesellschaft, Verhandlungen,* **1952.** p. 113–114. 2 refs. **DWB**—Forecasting method for an airport near Zürich based on wet bulb temperature, temperature on the top of the layer influenced by the diurnal heating and temperature at the level of condensation at 15 hrs. *Subject Headings:* **1. Radiation fog 2. Fog forecasting 3. Minimum temperature forecasting 4. Zurich, Switzerland.**—*A.A.*

6.1–103 551.509.51:551.575.5

§*Whiting, R. M., **Gulf Coast advection fog, Houston, Texas.** Atlanta, Georgia, Eastern Air Lines, Inc., Meteorology Dept., Sept. 1950. 12 figs., tables. Mimeo. **DWB**—A total of 252 cases of advection fog and advection radiation type fog in winter (Oct. through April 1946–50) are analyzed to find objective methods of forecasting the occurrence, onset and duration of poor ceiling and visibility conditions at Houston, Texas. Among the parameters which are significant are 1000 ft wind direction and speed, and water temperature off Galveston at 0730 E. The ideal condition for advection radiation fog (always ground fog) is when air that has been over the Gulf during the previous day moves slowly inland and is subject to nocturnal radiational cooling. Sea fog occurs when fog along the coast moves inland and occurs only when sea water temperatures along coast is $<70°$ and dew point $<70°$F. *Subject Headings:* **1. Fog forecasting 2. Objective forecasting 3. Local forecast studies 4. Houston, Texas. I. Eastern Air Lines, Inc.**—*M.R.*

6.1–104 551.509.51:551.575.5

*Funke, P. W., **Forecasting advection fog at Mobile, Alabama.** Atlanta, Georgia, Eastern Air lines, Inc., Meteorology Dept., Dec. 1951. 293 p. 24 figs., tables. **DWB**—An objective study of advection fog occurrence based on records at Bates Field since Dec. 1941. This airport is 30 mi N. of the Gulf of Mexico and 12 mi W. of Mobile Bay, elevation 218 ft, in level or slightly rolling, and swampy country. Ten years of hourly data involving 600 cases of fog are analyzed by a number of standard statistical methods to give forecast tools and suggestions which will bracket most of the situations when ceilings of 500 ft or less and visibility $<\frac{1}{2}$ mile would occur. Winds and synoptic situations figure strongly as parameters, in addition to dew point depression, cloudiness, time of year, etc. Time of formation and dissipation are the critical factors. *Subject Headings:* **1. Fog forecasting 2. Local forecast studies 3. Objective forecasting 4. Bates Field, Mobile, Ala. I. Eastern Air Lines, Inc.**—*M.R.*

6.1–105 551.509.5:551.577.32:551.553.21

*Pramanik, S. K. and Rao, K. N., **Influence of snow accumulation in the Himalayas on the subsequent rainfall in India.** *Irrigation and Power*, Simla, 10(1):107–109, Jan. 1953. tables, 5 refs. **DWB**—Attempts at forecasting the monsoon rainfall (June–Sept.) in India in early June have been made every year since 1886. Walker's method (1910) based on spring snowfall or snow cover in areas to the N. and W. of India (Afghanistan, Baluchistan, Kashmir, Punjab, etc.) gave fairly significant negative correlations. The correlations have been brought up to date so that rainfall over N.W. India and all of India (old and new) for periods 1876–1920, 1925, 1930, 1935, 1940 and 1945 can be compared. Although gradually decreasing, the results are still significant (0.3063 at 1% and 0.2355 at 5% level) and hence the May snowfall accumulation has been entered into the formula as $-.558(\times$May snowfall accumulation) along with pressure in South America, Dutch Harbor, etc. *Subject Headings:* **1. Monsoon rainfall forecasting 2. Long range forecasts 3. Statistical forecasts 4. Snow cover 5. India.**—*M.R.*

6.1–106 551.509.5:551.579:517.512.2

Szesztay, Károly, **Időjárási periódusok és értékelésük a hidrológiai előrejelzések szempontjából.** [Weather periodicities and their evaluation from the point of view of hydrologic forecasting.] *Időjárás*, Budapest, 57(5):288–300, Sept./Oct. **1953.** 10 figs., 9 refs., 7 eqs. **DLC, MH-BH**—In the first part of this essay the history of more than 20 years of periodicity analysis is summed up. Curves of a few Hungarian data series are presented in conjunction with sunspot data curves. An empirical method is developed for the approximation of data series by means of sine functions. It is found that periods derived from data series without specification of genetic relations are of no use for the purposes of forecasting. *Subject Headings:* **1. Statistical forecasting 2. Periodicities 3. Hydrologic forecasting.**—*Trans. of author's abstract.*

6.1–107 551.509.53:551.524.3:551.526.6

Åmot, Audvin, **On forecasting of air temperature for the Southwest-Norwegian coastal areas.** *Meteorologiske Annaler*, Oslo, 3(8):205–224, **1952.** 10 figs. **DWB**—A study of the

variation of air temperature, when it is streaming from the British Isles or Central Europe across the North Sea and towards northwestern Norway, for the purpose of forecasting air temperature for the southwest Norwegian coastal areas. The difference between the temperature of the air and sea surface (ΔT) was determined on the basis of ship observations and the heat exchange between air and sea surfaces is assumed to take place according to Newton's law of cooling. Frequency distribution of ΔT shows that in most cases the air temperature is not very different from that of the sea surface. The sea surface temperature in the North Sea for every month in the period 1934–37 is given graphically and the association between wind direction and ΔT is analyzed graphically. ΔT is found to depend largely on wind direction. *Subject Headings:* **1. Air-sea temperature variations 2. Temperature forecasting 3. Marine influences.**—*I.L.D.*

6.1–108 551.509.54:551.501.45

Coffin, James C. (*U. S. W. B., Wash., D. C.*), **A method of estimating precipitation normals for short-record stations.** *American Geophysical Union, Transactions,* 35(3):405–412, June **1954.** 7 figs., 4 tables, 3 refs. **MH-BH**—Regression formulas are developed from which estimates of the monthly normal precipitation at a station having a short record can be obtained. Using stations in western Washington the method is illustrated for records of ten years, five years and one year in length. The error decreases as the length of record increases and the amount of error can be estimated. The computation of a single regression of 32-year means on ten-year means involving 30 stations permits the estimation of normals for all stations in western Washington having only ten years of record. *Subject Headings:* **1. Precipitation forecasting 2. Regression formulas 3. Washington.**—*Author's abstract.*

6.1–109 551.509.58:525.63:627.5

Great Britain. [Inter] departmental Committee on Coastal Flooding, Interim report. . . . **Flood warning system.** *Great Britain. Parliament. Papers by Command,* Cmd, 8923, **1953.** 9 p. At head of title: [Great Britain]. Ministry of Housing and Local Government, and Ministry of Agriculture and Fisheries. Also: Its **Report** Cmd, 9165, London **1954.** 48 p. plate, 2 tables. **GB-MO.** Review of the **Report** in *Nature,* London, 174(4422):193–195, **1954. DWB**—1) Following on floods of Jan. 31–Feb. 1, 1953, a warning system is recommended between Sept. 15 and April 30 for the east coast based on Central Forecasting Office at Dunstable and reports of water levels, of dangerous levels (decided by River Boards). Local schemes to be worked out by River Boards, Police and Local Government Authorities. 2) A reasoned statement of recommendations to avoid flooding by storm surges in future. In general the flood levels of Jan. 1953 on east coast and Thames estuary are regarded as the standard against which protection should be provided. Experiments on a model of the Thames are described and various protective measures for London discussed. Append. B is the report of the Oceanographic Sub-Committee and Append. C a note on the change of mean sea due to sinking of the land in S.E. England and rising in the N.W. since Roman times. *Subject Headings:* **1. Flood warnings 2. Flood control 3. Storm surges 3. British Isles.**—*C.E.P.B.*

ARTIFICIAL PRECIPITATION

6.1–110 551.509.67

Evans, T. H., **The present status of rainmaking.** *Public Works,* N. Y., No. 11:53, 126, Nov. **1953.** photo. **DLC**—Statistical analysis of rainfall during the past 2 or 3 years in Colorado and other western states made by the Engineering School of Colorado A. & M. fail to show any significant increase in precipitation which could be attributed to silver iodide seeding of clouds. Nor has there been any proof that the seeding in many cases has not been successful. Since results, if any, are on a small scale rather than the large scale at first envisioned, it will take years to come to any sound conclusion in this regard. The cautious attitude of the U. S. Weather Bureau toward enthusiastic claims in the early stages of the cloud seeding "boom" is commended. *Subject Headings:* **1. Artificial precipitation 2. Cloud seeding evaluation 3. Colorado.**—*M.R.*

6.1–111 551.509.67

Roulleau, J., **La pluie artificielle.** [Artificial rain.] *La Houille Blanche*, Grenoble, 9(1):38–42, Jan./Feb. **1954.** English summary p. 38.—Digest and discussion, *Ibid.*, 8(B):698–700, Nov. **1953. DLC**—In this general treatment of the problem of rainmaking, the natural mechanism of rain, the effect of cloud seeding and the usefulness of rainmaking are discussed. While emphasizing the utility of cloud seeding in various situations the author nevertheless makes it clear that it does not appear to be possible so far to modify precipitation of large cloud systems connected with major perturbations. The effectiveness of cloud seeding is limited to shower clouds. *Subject Heading:* **1. Artificial precipitation.**—*G.T.*

6.1–112 551.509.67:34

U. S. Congress. House. Committee on Interstate and Foreign Commerce, **Weather modification experiments. Hearing before the Committee. . . .** 83rd Congress, 1st Session, on H.R. 1064 and H.R. 2580, Bills to create a committee to study and evaluate public and private experiments in weather modification; H.R. 1584, a bill to authorize the Secretary of Commerce to provide for research and study, and in cooperation with the States, to establish appropriate safeguards, with respect to weather modification operations and the problems related thereto; S. 285, an act to create a committee to study and evaluate public and private experiments in weather modification. July 28, 1953. Wash., D. C., Govt. Print. Off., **1953.** 45 p. **DLC**—In addition to text of the 3 bills, the document contains reports of Depts. of Agriculture, Health and Welfare, Army and State, Civil Service Commission, Budget Bureau, National Science Foundations, American Meteorological Society, etc. on the 3 weather modification committee bills or on the feasibility of weather control in general. Statements by D. M. Little, Senator Case and others are also included. *Subject Headings:* **1. U. S. Advisory Committee on Weather Control 2. Weather control hearings 3. Cloud seeding regulations.** —*M.R.*

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

STRUCTURE OF THE ATMOSPHERE—IONOSPHERE

See also: **Rockets and upper atmos.** (Newell), 6.1–9; **Wind fields in stratosphere** (Widger), 6.1–13; **Study of ionosphere** (Ranzi), 6.1–41; **Solar eclipse effect on ionosphere** (Mitra), 6.1–52; **Propagation meas. in ionosphere** (Seddon), 6.1 62; **Mechanisms of earth's atmos.** (Ishimaru), 6.1–134; **Ionospheric winds** (Ratcliffe), 6.1–255; **Smuisty** (Hamilton), **6.1–252; Solar flares** (Mitra), **6.1–342.**

6.1–113 551.510.41:551.594.14

Anderson, W.; Mayneord, W. V. and Turner, R. C., **The radon content of the atmosphere.** *Nature*, London, 174(4427):424–426, Sept. 4, **1954.** fig., 13 refs. **DWB**—Comparative measures of radon by filter paper and ion chamber showed that the latter gave values 10–100 times the former. Large values in London smog (8×10^{-13} curie/liter by filter paper) suggest radon is derived from coal and prevented by solid matter from dilution. Measurements of coal and coal ash show $0.05–0.3\times10^{-12}$ gm radium per gm coal, 70–80% of which is liberated by burning. Coal gas contains 0.5×10^{-12} c/lit. Fraction of atmospheric radon originating from coal cannot yet be assessed. *Subject Heading:* **1. Radon in the atmosphere.**—*C.E.P.B.*

6.1–114 551.510.41

†*Dole, Malcolm; Rudd, D. P.; Lane, G. A.; Zaukelies, D. A. and Brown, J. B., **The height and geographical distribution of the oxygen isotopes.** Northwestern Univ. Dept. of Chemistry, Contract AF(122)-157 and AF(604)-587, Final Report, Jan. 1, **1954.** 108+p. 28 figs., tables, 36 refs., eqs. Mimeo. **MH-BH**—A complete report on work done in measuring the relative amount of oxygen isotopes by the water density and the mass spectrometer method, and of nitrogen isotopes by the mass spectrometer method. Samples of surface air were obtained in various parts of the United States, in South America, Central America, Finland, Holland, Japan, Australia and the Arctic. Variations were found to occur only in air obtained from kelp beds of the Pacific. Air dissolved in Pacific ocean water obtained at great depth shows an increase in O^{18} percentage, but a normal N isotope concentration. Isotopes of O and

N obtained in balloon flights up to 87,000 ft proved to be normal. Rocket samples show normal N isotope concentration, but O^{18} percentage of 0.2046% at 46.4 km and 0.2043% at 51.6 km (after corrections have been applied) or 0.3% greater than normal. Equipment for both the water density and mass spectrometer method, the procedures developed, theory, history of research, reviews of other literature and data obtained are presented along with charts, photographs, line drawings, etc. *Subject Headings:* **1. Oxygen isotopes 2. Nitrogen isotopes in air 3. Mass spectrometer analysis. I. Northwestern Univ. Dept. of Chemistry II. Contract AF 19(122)-157 III. Contract AF 19(604)-587.**—*M.R.*

6.1–115 551.510.41:551.521.3

*Howard, John Nelson, **Absorption of near infrared blackbody radiation by atmospheric carbon dioxide and water vapor.** Ohio. State Univ. Research Foundation, Contract DA-407, Atmospheric Transmission of Blackbody Radiation, Report, No. 1, March 31, **1950.** 14 p. 25 figs., 7 refs. **DWB**—As a continuation of report which dealt with absorption by H_2O plus CO_2 in 1–7.5μ spectral region, the present report discusses and illustrates energy transmitted through atmosphere in 0.7–3μ, 0.7–6μ, and 0.7–12μ regions from blackbody sources at temperatures form 30° to 3000°C with varying H_2O and CO_2 content. Spectral transmission curves and nomograms for calculating transmission are presented. Theory, necessary formulas and assumptions are also outlined in detail. *Subject Headings:* **1. Carbon dioxide absorption 2. Absorption by water vapor. I. Ohio. State Univ. Research Foundation II. Contract DA-407.**—*M.R.*

6.1–116 551.510.41:551.508.91

Lugg, G. A. and Wright, A. S., **The determination of toxic gases and vapours in air.** *Australia. Defence Research Laboratories, Maribyrnong, Victoria, Circular* 14, June **1953.** 48 p. 2 plates, refs. mimeo. **GB-MO**—Simple methods are described for determining low concentrations of 21 gases. Of meteorological interest are ammonia, carbon monoxide, nitrous fumes, ozone and sulphur dioxide. *Subject Headings:* **1. Atmospheric impurities 2. Ozone.**—*C.E.P.B.*

6.1–117 551. 510.42:533.607

Strom, Gordon H. and Halitsky, James (*N. Y. Univ.*), **Important considerations in the use of the wind tunnel for pollution studies of power plants.** *Air Repair*, Pittsburgh, 4(2):24–30, Aug. **1954.** 6 figs., 5 refs., 7 eqs. **DWB**—Experimental techniques and calculations connected with wind tunnel tests of atmospheric diffusion of stack effluents are developed. The tests involved a scale model of an existing power plant. Results are in good agreement with those obtained under natural conditions. This suggests usefulness of wind tunnel experiments for studying the effect of plant modifications on atmospheric pollution. *Subject Headings:* **1. Atmospheric pollution studies 2. Wind tunnel experiments 3. Stack effluents.** —*G.T.*

6.1–118 551.510.42

Thomas, Fred W. (*Tennessee Valley Authority, Wilson Dam, Ala.*), **TVA air pollution studies program.** *Air Repair*, Pittsburgh, 4(2):7–12, Aug. **1954.** Discussions by Ingram, W. T. and Davidson, W., *Ibid.*, p. 12, 30. **DWB**—The air pollution control program carried on by TVA is described. Meteorological and air pollution instrumentation are discussed, and methods of data reduction and analysis described. Specific examples are cited to illustrate studies on effective stack height and diffusion. Information obtained indicates that the effective stack height and critical wind speed can be estimated with sufficient accuracy for practical evaluation of air pollution control requirements. *Subject Headings:* **1. Atmospheric pollution studies 2. Stack effluents.**—*Author's summary.*

6.1–119 551.510.41:546.214

Carbenay, Janine and Vassy, Arlette, **Dosage continu de l'ozone atmosphérique.** [Continuous determination of atmospheric ozone.] *Annales de Géophysique*, 9(4):300–308, Oct./Dec. **1953.** 5 figs., 11 refs. French and English summaries p. 300. **MH-BH**—The first chemical determination of O_3 in the atmosphere near the ground was made by HOUZEAN in 1858. Regular measurements were made in Paris from 1875 to 1909. Spectrographic

determinations began in Feb. 1913. The present method which can be made automatic, uses a modified Bowen-Regener apparatus with the following reaction: $O_3+2KI+H_2O \rightarrow O_2+2KOH+I_2$ and $I_2+2Na_2S_2O_3 \rightarrow Na_2S_4O_6+2NaI$. After each determination the reaction chamber is automatically washed to remove all traces of iodine or iodide. The process is automatically recommenced. An electrolytic device permits recording. Circuits, apparatus, design and appearance are illustrated. Accuracy is very high except in the city where SO_2 affects electrolytic process and thus the calibration of the equipment. The automatic records shown were made in the country 30 km from Paris in July–Sept. 1953. *Subject Headings:* **1. Ozone determination 2. Automatic ozone recorders 3. Väl-Joyeux, France.**—*M.R.*

6.1–120 551.510.535

Gladden, Sanford C. (*National Bureau of Standards, Wash., D. C.*), **Procedures used to improve the quality of ionospheric data.** *American Geophysical Union, Transactions*, 35(3): 398–404, June **1954.** 9 figs. **MH-BH**—The paper outlines procedures used in the examination of data received from 21 field stations. Figures are provided to illustrate the type of records examined and the results of interstation comparison. Stations separated by not more than four degrees of geomagnetic latitude are compared graphically as regards monthly medians of the various characteristics. Discovery of operating errors which had escaped observation for several months are described. A type of scaling error discovered by graphical comparison of stations is mentioned. *Subject Headings:* **1. Ionospheric data analysis 2. Interstation data comparisons.**—*Author's abstract.*

6.1–121 551.510.535:551.501.83

Lauter, E. A., **Variationen der D-Schichtdämpfung auf 245 kHz.** [Variations of D layer damping on 245 kHz.] *Zeitschrift für Meteorologie*, 7(11):321–330, Nov. **1953.** 18 figs., 19 refs. **MH-BH**—Results of the measurement of reflection coefficient on 245 kHz during midday and in the evening are communicated. The diurnal and auroral course of the damping is shown, and the data with other frequencies compared. The damping values of the D layer have a close relationship to atmospherics and a weak one to geomagnetic activity. A 24-day recurrence tendency is clearly indicated. The midday values of the damping are 2 nepers in the winter and almost 7 nepers in the summer. *Subject Headings:* **1. D layer damping 2. Sferics 3. Solar effects.**—*A.A.*

6.1–122 551.510.535

Veldekamp, J. and Scholte, J. G. J., **Magnetische dubbele breking in de ionosfeer.** [Magnetic double refraction in the ionosphere.] (In: Netherlands. (K.) Meteorologisch Instituut, **1854 Koninklijk Nederlands Meteorologisch Instituut, 1954.** 'S-Gravenhage, **1954.** p. 430–442. table, 15 refs., 18 eqs. **DWB**—Measurements of double and triple magnetic refraction in the F2-layer above de Bilt ($cp = 52°6'.1$ N, $\lambda = 5°10'6$E) are compared with the calculated gyrofrequency. Formulas are derived for the reflection of ordinary and extraordinary rays for vertical incidence in an electron-ion ionosphere, with allowance for collisions of electrons and ions. The observed differences between the critical frequencies f_z, f_o and f_x cannot be explained by the existence of ions, nor by the disturbing influence of electric currents in the ionosphere. It is found that the deviation of the ray-paths in the geomagnetic field may provide a sufficient explanation for the discrepancies. *Subject Headings:* **1. Ionospheric reflection 2. F2 layer.**—*Authors' abstract.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

See also: **Atmos. energetics** (Kohlsche), 6.1–128; **Mechanism of earth's atmos.** (Ishimaru, Y.), 6.1–134; **Atmos. circulation** (Fofonoff), 6.1–136; **General Circulation Project** (Chicago. Univ. Dept. of Met.), 6.1–155; **Atmos. turbulence res.** (Poppendiek, Vehrencamp), 6.1–203; **Wind field structure** (Newton), 6.1–212; **Vorticity trajectories** (Hess), 6.1–224.

6.1–123 551.511

†Böhme, W., **Über thermisch bedingte Zirkulationsmechanismen in einer im Grundzustand ruhenden, isothermen Atmosphäre.** [On the thermal circulation mechanisms in an initially motionless isothermal atmosphere.] *Zeitschrift für Meteorologie*, 8(2/3):52–66,

Feb./March **1954**. fig., 61 refs., 82 eqs. **DWB**—A further development of a study published by GRIESSEIER (*see item* 5.7–8, July 1954, *MAB*), considering also friction in the Guldberg-Mohn form and the wind components in a more precise manner. Flat basis of the atmosphere is assumed. Solutions are given for the disturbances of all field values caused by periodically distributed and periodically acting heat sources. Exterior heat supply in the free atmosphere (and heat caused by friction) is neglected except the vertical turbulent heat flow. No numerical solutions or qualitative evaluations are supplied. *Subject Headings:* **1. Dynamic meteorology 2. Atmospheric circulation theory.**—*A.A.*

6.1–124 551.511

Höiland, Einar, **On the effect of variation in gravitational stability in a linear fluid flow.** *Norske Videnskaps-Akademi i Oslo. Institutt vor Vaer- og Klimaforskning, Report*, No. 3, **1953.** 9 p. 2 figs., 3 refs., 23 eqs. **DWB**—Several cases are considered theoretically: namely, flow with constant shear ($u''=0$) when U_2 is positive and negative, respectively, and when there are several homogeneous layers divided by discontinuity surfaces (after G. I. TAYLOR, 1931). The special conditions for formation of instability waves under these general assumptions are set forth mathematically and graphically. *Subject Heading:* **1. Instability waves.** —*M.R.*

6.1–125 551.511

Hollmann, G., **Eine Lösung der barotropen Vorticity-Gleichung mit der Periode eines Sterntages.** [A solution of the barotropic equation with the period of a sidereal day.] *Meteorologische Rundschau*, 7(7/8):121–123, July/Aug. **1954.** fig., 7 refs., 28 eqs. **DWB**—Former analytical solutions of the vorticity equation for nondivergent horizontal flow include only zonal field displacements. By transformation to absolute coordinates with inclusion of an absolute flow function it is possible to construct also solutions with meridional components of displacement. In the rotating coordinate system they have a sidereal day period. The corresponding pressure field is also calculable. *Subject Heading:* **1. Vorticity equations.**—*Trans. of author's abstract.*

6.1–126 551.511

IAglom, A. M., **Dinamika krupnomasshtabnykh protsessov v barotropnoĭ atmosfere.** [Dynamics of large scale processes in a barotropic atmosphere.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geofizicheskaia*, No. 4:346–369, **1953.** 2 tables, 11 refs., 93 eqs. **DLC**—Complexity of the hydrodynamic processes in the atmosphere requires the separation of dynamic factors from thermal factors and solution of the problem by the method of successive approximation. Dynamic factors affecting pressure variations were investigated by A. S. MONIN and A. M. OBUKHOV without taking into account the earth's sphericity. In this study the dynamic disturbances are analyzed according to sphericity of the earth. Linearized system of equations of dynamic processes in barotropic atmosphere is investigated. Two methods are used for conversion of the equation and exclusion from them of the elements of wave process. These are Kibel's method of function decomposition or the change of the general equation of continuity by conditions of the two-dimensional field incompressibility. *Subject Headings.* **1. Dynamics of the atmosphere 2. Pressure variations 3. Large scale weather processes.**—*N.T.Z.*

6.1–127 551.511

Ishimaru, Y. (*Fukuoka District Cent. Met. Obs.*), **Mechanism of the earth's atmosphere (4th communication). Fundamental vorticity equation and jet stream mechanism.** *Geophysical Magazine*, Tokyo, 24(1):40–80, Aug. **1952.** 8 figs., 8 tables, eqs. **MH-BH**—A new equation of motion is derived for vorticity in the atmosphere with spherical coordinates separated into the divergence and the vorticity terms. The author derives a formula for the "diffusion" or vorticity and obtains a jet stream profile due to the vorticity flow with westerly wind in all latitudes. Combining "thermal" flow with "vorticity" flow, a general wind profile equation is given which fits the observations better. Tables are provided which facilitate the numerical evaluation. *Subject Headings:* **1. General circulation 2. Meridional wind profiles 3. Vorticity equations 4. Jet stream.**—*A.A.*

6.1–128 551.511:551.513

Kohlsche, Kurt, **Beitrag zur atmosphärischen Energetik.** [A contribution to atmospheric energetics.] *Zeitschrift für Meteorologie*, 7(11):330–337, Nov. **1953.** 4 figs., 4 refs. **MH-BH**—Proposes to use Euler's equations of motion for an inertial (absolute) system with the origin of coordinates in the center of the earth. Comparing with the equations of motion in a relative system, as commonly used in meteorology, the results lead to a deeper and from the thermodynamic point of view more correct understanding of the general circulation especially for the effect of meridional flow, circulation around lows and highs, oceanographic aspects, the trade wind circulation, the jet stream, etc. *Subject Headings:* **1. Equations of motion 2. Dynamics of the atmosphere 3. General circulation.**—*A.A.*

6.1–129 551.511

Kuo, Hsiao-Lan, **The development of quasi-geostrophic motions in the atmosphere.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 24:27–52, Nov. **1953.** 5 figs., refs., 59 eqs. *AFCRC Technical Report*, 53-35. **DWB, DLC**—It is shown that the large-scale quasi-geostrophic motions in the atmosphere are governed by a three-dimensional differential equation for the local pressure tendency or the tendency of the isobaric height, whose coefficients depend upon the temperature distribution and latitude. This equation is solved by Green's method for three different cases of the static stability factor, to give three-dimensional predictions of the subsequent development of the weather situation. The stability properties and the variations of amplitudes with height of the disturbances in a baroclinic zonal current are also discussed by a simple method. It is found that, when friction is neglected, the waves shorter than a certain wavelength L_c are all unstable, and there exists a most unstable disturbance with wavelength L_k. Both L_c and L_k depend upon the vertical wind shear and the static stability factor. The results also show that the very long waves are essentially upper-level phenomena; the very short waves are limited to the lower part of the atmosphere, and their amplitudes decrease rapidly with height. *Subject Headings:* **1. Atmospheric circulation theory 2. Objective forecasting. I. Massachusetts Institute of Technology II. Contract AF 19(122)-153.**—*Author's abstract.*

6.1–130 551.511:551.551

Monin, A. S. and Obukhov, A. M., **Bezrazmernye kharakteristiki turbulentnosti v prizemnom sloe atmosfery.** [Isotopic characteristics of turbulence in the atmospheric layer near the ground.] *Akademiia Nauk SSSR, Doklady*, 93(2):257–260, Nov. 11, **1953.** 2 figs., 6 refs., 12 eqs. **DLC**—The inhomogeneity of air temperature influences considerably the characteristics of turbulent exchange. In this highly theoretical paper the authors apply methods of the theory of similarity to an analysis of empirical data on the distribution of temperature and winds in the atmospheric layer near the ground. They disregard the action of Coriolis force, the influence of molecular viscosity and heat conductivity and take into consideration the small changes of density, caused only by changes of temperature, but not pressure. *Subject Headings.* **1. Turbulent exchange 2. Temperature change effects.**—*A.M.P.*

6.1–131 551.511:551.551:551.554:551.524.4:551.571.4

Rider, N. E., **Eddy diffusion of momentum, water vapour, and heat near the ground.** *Royal Society of London, Philosophical Transactions, Ser. A*, 246(918):481–501, June 8, **1954.** 9 figs., 7 tables, 14 refs., 12 eqs. **DWB**—Profiles of wind, temperature and humidity 15–200 cm above short grass at Cardington, with measurements of surface wind drag and evaporation (51 sets) are tabulated and discussed. Profiles of wind speed, temperature and, generally, humidity had the same form, departing from the logarithmic. Deacon's wind profile law applied in adiabatic and unstable but not in stable conditions, when the equations of Rossby and Montgomery and of Holtzman gave a better fit. Diffusivities of momentum and vapor were identical, but diffusivity of heat was sometimes much larger. *Subject Headings:* **1. Eddy diffusion 2. Temperature profiles 3. Wind profiles 4. Humidity profiles.**—*C.E.P.B.*

6.1–132 551.511:551.521.3:551.551

Saissac, J. (*Etab. d'Études et de Recherches Met., Magny-les-Hameaux*), **Mesure de la diffusivité turbulente dans l'atmosphère.** [Measurement of turbulence diffusivity in the

atmosphere.] *Journal Scientifique de la Météorologie, Paris*, 5(18):49–56, April/June **1953.** 5 figs., 8 eqs. French, English and Spanish summaries p. 49. **DWB**—The turbulent diffusivity is calculated from measurements made (a) near the ground by means of lapse rate of temperature between 3 elements mounted one above the other (connected with 2 thermocouples) so that they measure the mean temperature gradient over a period of 5 min with ventilation of 5 m/sec and (b) around 2–3 km above the ground by radiosonde. Only the results of turbulence in terms of temperature gradient, irrespective of wind are indicated by this method. Experiments were made at the Meteorological Research Institute of Magny-les-Hameaux, France in July 1952–Jan. 1953. *Subject Headings:* **1. Turbulent diffusivity measurements 2. Vertical temperature gradient 3. Magny-les-Hameaux, France.**—*M.R.*

6.1–133 551.511

Syōno, Sikegata (*Tokyo Univ.*), **Note on the polytropic Exner function and its application to the theory of adiabatic chart.** *Meteorological Society of Japan, Journal*, 2nd Ser., 31(9):313–317, Sept. **1953.** refs., 18 eqs. **MH-BH**—The author introduces a polytropic parameter into the Exner function and applies the results of his formula to deriving coordinates for various aerological charts, such as the emagram (Refsdal), tephigram (Shaw), aerogram (Refsdal) and atmospheric chart (Tamaoka-Simose). *Subject Headings:* **1. Adiabatic charts 2. Dynamics of the atmosphere.**—*G.T.*

GENERAL CIRCULATION

See also: **Application of turbulence theory** (Inoue), 6.1–196.

6.1–134 551.513.1:551.511

Ishimaru, Y., **The mechanism of the earth's atmosphere (3rd communication). On the general atmospheric circulation.** *Geophysical Magazine*, Tokyo, 23(3):229–301, March **1952.** 19 figs., 22 tables, refs., 203 eqs. **MH-BH**—The theory of the general circulation of the atmosphere, published in 1888 by Oberbeck is reanalyzed and significantly improved, by adapting it to a compressible atmosphere and by considering the effect of turbulent eddies. The characteristic features of the general circulation are explained theoretically, including some facts found only by modern observations—for example, the reversed meridional temperature gradient for higher levels (above 0.65 of the tropopause layer), equatorial and polar fronts, the mechanism of jet streams, vorticity effects, etc. Not only is the theory developed in great detail, but numerical solutions are presented in order to verify the theory by observations. The horizontal and vertical temperature, density and pressure distribution in the atmosphere are derived, as well as vertical and zonal components of air currents. Schematic diagrams, derived from the theory, show the intensity of the zonal, meridional and vertical principal atmospheric circulation over the earth. The approach is refined by the introduction of a secondary circulation, caused by the pressure distribution in the principal circulation. The distribution of vorticity on the globe is derived, as well as the position of the jet stream for each month on the basis of the seasonal temperature distribution. One of the appendices deals with the radiational heat balance. (*See also* 2.6–46 and 2.10–53, June and Oct. 1951, respectively, *MAB.*) *Subject Headings:* **1. General circulation 2. Dynamic meteorology 3. Jet stream 4. Vorticity. I. Oberbeck, A.**—*A.A.*

6.1–135 551.513.1

*Priestley, Charles H. B. and Troup, A. J., **Further studies of the physical interactions between tropical and temperate latitudes.** *Australia. Commonwealth Scientific and Industrial Research Organization. Section of Meteorological Physics, Technical Paper*, No. 1, **1954.** 22 p. fig., 14 tables, refs. **MH-BH**—The annual mean eddy flux of momentum, enthalpy and heat and the meridional component of wind at selected pressure levels up to 150 mb is computed for 5 stations lying between 26 and 36°N and one on 37°S. The characteristic latitude averages are 1.06 dyn cm^{-1} for the integrated Reynold's stress, 0.38 cal cm^{-1} min for the eddy flux of enthalphy and $0.32.10^7$ cal cm^{-1} min^{-1} for the eddy flux of latent heat. Contrary to recent computations by Starr and White, a mean meridional circulation was found. The discrepancy is explained by a more careful selection of data made by the authors;

usually balloons are lost at 200 mb during strong winds so that simple averages are in favor of lighter upper winds, falsifying the conclusion. *Subject Headings:* **1. General circulation 2. Horse latitudes 3. Sampling errors 4. Tropical meteorology.**—*A.A.*

6.1–136 551.513:551.511

Fofonoff, N. P., **A mathematical model of zonally uniform atmospheric circulation.** Brown Univ. Dept. of Oceanography, Contract NR 083-050, Technical Report, No. 3, June **1953.** 19 p. 4 figs., 4 refs., 35 eqs. **DWB**—A mathematical model of a simplified atmosphere is described which is suitable for considering certain processes of heat exchange. The model is set up for an almost incompressible atmosphere, that is, the variations in density are neglected except in the term representing gravitational force. Only the dynamics, not the thermodynamics, of the problem is considered. The resulting equations of motion are simplified by perturbation methods regarding the ratio of atmospheric thickness to the radius of the earth as the perturbation parameter. Given a density distribution in the atmosphere as an arbitrary function of latitude and height, the model determines the zonal velocity component and the meridional circulation. A simple numerical example is given to illustrate the type of flow to be expected from the model. *Subject Headings:* **1. Atmospheric circulation 2. Heat exchange 3. Dynamics of the atmosphere. I. Brown Univ. Dept. of Oceanography II. Contract NR 083-050.**—*Author's abstract.*

6.1–137 551.513

Dedebant, Georges (*Argentine Nat. Met. Service*), **La circulación del aire en la República Argentina.** [Circulation of air in Argentina.] *Meteoros*, Buenos Aires, 3(2/3):194–246, April/Sept. **1953.** 3 figs., eqs. French summary p. 194. **DWB**—A theoretical paper which uses the principles of statistical mechanics to analyze the atmospheric circulation over Argentina. Barometric pressure is used as the principal meteorological variable. The author considers the use of correlation method for synoptic conditions, the analysis of perturbation, the application of stochastic processes to short range and long range forecasting, etc. *Subject Headings:* **1. General circulation theory 2. Statistical techniques 3. Long range forecasting 4. Argentina.**—*I.L.D.*

6.1–138 551.513

Berlage, Hendrik P., **Een elementair beeld der algemene luchtcirculatie afgeleid uit haar grensvoorwaarden.** [An elementary picture of the general circulation deduced from its boundary conditions.] (In: Netherlands. (K.) Meteorologisch Instituut, **1854 Koninklijk Nederlands Meteorologisch Instituut, 1954.** 'S-Gravenhage, **1954.** p. 282–298. 2 figs., table, 14 refs., eqs.) **DWB**—It is shown that we can come very near to explaining the puzzling characteristic zonal partition of the planetary air circulation by simply applying general principles and introducing given boundary conditions. This study is derived from an earlier one. *Subject Headings:* **1. General circulation 2. Zonal circulation.**—*Author's abstract.*

6.1–139 551.513.1

Starr, Victor P. and Long, Robert R., **The flux of angular momentum in rotating model experiments.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 24:103–113, Nov. **1953.** 2 figs., table, 8 refs. *AFCRC Technical Report* 53-35. **DWB, DLC**—The flux of angular momentum in rotating model experiments, in which relative motions (in water) are generated by differential heating, is investigated observationally. For appreciable rates of rotation a close similarity is obtained with the atmosphere at the jet stream level, not only in regard to the appearance of the flow patterns, but also in the mode of poleward transfer of angular momentum as measured quantitatively. *Subject Headings:* **1. Angular momentum flux. I. Contract AF 19(122)-160.**—*Authors' abstract.*

6.1–140 551.513.2

*Ernst, F. W. (*U. S. W. B., Los Angeles*); Fox, Roy L. (*U. S. W. B., Great Falls, Mont.*) and Hutchison, H. E. (*U. S. W. B., Albuquerque*), **Verification of a formula for the growth of troughs and wedges.** *American Meteorological Society, Bulletin*, 34(10):441–443, Dec. **1953.** 3 tables, ref. **MH-BH**—A formula for the instantaneous growth rate of vorticity waves was

tested on 152 contour troughs and 101 contour wedges at the 500-mb level. It was found that the formula could be used qualitatively for determining whether individual troughs and wedges will intensify or weaken over periods of 24 hours, without carrying out the laborious computations required by an exact application of the formula. Further examination of data showed that cut-off lows formed in pre-existing troughs most readily when the negative tilt of the troughs was greater than 15°, or strong assymmetry was present. *Subject Headings:* **1. Troughs and ridges 2. Vorticity equations.**—*Authors' abstract.*

ATMOSPHERIC DISTURBANCES

See also: **Thunderstorm location** (Norinder), 6.1–10; **Radiosonde ascents in thunderstorms** (Beebe), 6.1–58; **Typhoon movement forecasting** (Masuda, others), 6.1–93; **When big winds blow** (Reese, others), 6.1–94; **Typhoon warnings** (Rodewald), 6.1–95; **Typhoon forecasting** (Tanabe), 6.1–96; **Hurricane and typhoon forecasting** (U. S. Bur. of Aeron.), 6.1–97; **Tornado predicting**, 6.1–98; **Thunderstorm forecasting** (Fawbush, Miller), 6.1–99; **Thunderstorm forecasting** (Ramaswamy, Bose), 6.1–100; **Thunderstorm microbarograms** (Brooks), 6.1–189; **Surface wind friction** (Johnson), 6.1–213; **Storm surges** (Kovačević), 6.1 221; **Dynamical theory of storm surges** (Proudman), 6.1–222; **Cornered** (Carver), 6.1–255; **Tornado cloud formation** (Dines), 6.1–257; **Floods in Western Europe** (Brandt), 6.1–290.

6.1–141 551.515:616.24 551.586:616.24

†Berg, Hellmut, **Zur Meteorotropie der fulminanten Lungenembolie.** [On the meteorotropism of fulminant lung embolism.] *Annalen der Meteorologie, Medizin-meteorologische Hefte*, No. 9:60–73, **1953.** 5 tables, 37 refs. **MH-BH**—Previous work in Germany, which is fully summarized, showed an apparently real increase of frequency of lung embolism on days with passage of warm and cold fronts and thunderstorms. The evidence is discussed, leading to the conclusion that the connection, though probable, is not yet statistically proved. *Subject Headings:* **1. Atmospheric disturbances 2. Respiratory diseases.**—*C.E.P.B.*

6.1–142 551.515:519.241.1

Buell, C. E., **Some relations among atmospheric statistics.** *Journal of Meteorology*, 11(3):238–244, June **1954.** 9 figs., 10 refs., 15 eqs. **MH-BH**—Formal relations are set up between standard deviations of pressure p, density σ, temperature, geostrophic wind, height and pressure gradient, and expressions given for correlation coefficients between these quantities. Values of $r(p\sigma)$ for a number of stations for heights 0–10 km are mainly negative between about 2 and 8 km (except in Alaska). The "size" of pressure systems is measured by depth and radius, calculated by correlation between p at two points separated vertically or horizontally. *Subject Headings:* **1. Atmospheric disturbances 2. Correlation coefficients.**—*C.E.P.B.*

6.1–143 551.515:523.74

Kolobkov, N. V., **Az 1953. január 31-i angliai vihar.** [The storm of Jan. 31, 1953 over England.] *Időjárás*, 57(1):52–54, Jan./Feb. **1953.** 2 figs. **DLC**—Popular speculation on the cause of intense storms such as were observed throughout the world during the period 1950–1952. These extensive storms, the author believes, are due to an intensification of the general circulation. Solar activity (our only source of energy) and sunspots in particular may account for this intense circulation, although the correlation is much more complicated than might be expected. The article is a translation (by S. Gelléri) from the Russian magazine *Ogonek* (No. 4, 1953). *Subject Headings:* **1. Cyclonic storms 2. Sunspot effects. I. Gelléri, Sandor.**—*G.T.*

6.1–144 551.515:551.509.317(263)

Jordan, Charles L., **The high troposphere of the tropics: A problem for the International Geophysical Year.** *Journal of Meteorology*, 11(1):82, Feb. **1954.** table, 3 refs. **MH-BH**—Frequency of appearance of 200 mb lows in N. Atlantic 25–5°N, July 20–Oct. 10, 1953, is tabulated. Many of them moved from SE, S or SW. Results differ from R. H. Simpson's

for Pacific (*Journal of Meteorology*, 10:404–405, 1953; *see item* 5.3–162, March 1954, *MAB*), largely because of differences of technique. A greatly expanded aerological network during International Geophysical Year would make understanding of synoptic processes in tropics possible. *Subject Headings:* **1. Upper air lows 2. Upper air analysis 3. Tropical Atlantic.** —*C.E.P.B.*

6.1–145 551.515:550.34(914)

Deppermann, C. F. (*Dir. Manila Obs.*), **Tropical disturbances and microseisms as observed in Baguio City.** *Philippines. Weather Bureau, The Elements*, 3(11):9–12, Nov./Dec. **1952. DWB**—Various types of microseisms are reviewed as to their origin. After describing several instances of instrumental (apparent) microseisms, the author discusses the following possible extrinsic causes: 1) wind, 2) surf, 3) waves acting on shore, 4) atmospheric pumping, 5) waves acting on ocean bottom under typhoon center and 6) cold fronts. Several peculiarities of microseismic recordings at Baguio are mentioned, such as lack of response to typhoons over the Pacific, intensity of microseisms directly proportional to depth of China Sea beneath typhoon, etc. *Subject Headings:* **1. Microseisms 2. Baguio, Philippines.**—*G.T.*

6.1–146 551.515:550.34

§Donn, William L., **Direction studies using microseism ground-particle motion.** *American Geophysical Union, Transactions*, 35(5):821–832, Oct. **1954.** 16 figs., 8 refs. Also: Columbia Univ. Lamont Geological Observatory, Contract AF 19(122)-441, Contract N6onr-27133, Technical Report on Seismology, No. 31, Aug. **1953.** 17 p. 16 figs., 8 refs. **DWB**—Ground-particle trajectories were constructed for Palisades microseisms originating in storms having various positions and azimuths with respect to the continental margin. It was found that good directional success was obtained for sources on the continental shelf or for deep-water storms on an azimuth normal to the continental margin. The complete lack of directional relationship between particle motion and source direction for deep water sources having azimuths oblique to the coast is ascribed to simple refraction or interference between waves having multiple refraction paths. Microseisms arriving at Palisades with 8 to 9 sec period and 1 to 2 microns ground amplitude have been traced back to North Pacific sources more than 5000 km away. Very good directional correlation was obtained in these cases between ground-particle motion and source direction. The results of the study appear to explain the original tripartite success of RAMIREZ in obtaining good locations for Atlantic storms. *Subject Headings:* **1. Cyclonic microseisms 2. Microseismic storm detection 3. Palisades, N. Y. 4. Northwest Atlantic. I. Columbia Univ. Lamont Geological Observatory II. Contract AF 19(122)-441 III. Contract N6onr-27133.**—*Author's abstract.*

6.1–147 551.515:550.342

Gutenberg, Beno and Benioff, H., **An investigation of microseisms associated with meteorological phenomena.** California Institute of Technology, Contract AF 19(122)-436, Reports No. 1–3, May 31–Dec. 1, **1951.** 3 pieces. 2 graphs, 5 figs. Reports No. 5–9, June 1, 1952–June 1, **1953.** 5 pieces. figs. Photostat. **DWB**—Report No. 1 is a brief report on instrumental development, studies of a storm of March 3–9, 1951 recorded at Pasadena, and studies of Rayleigh waves in earthquakes and microseisms. In Report No. 2, two BENIOFF variable reluctance vertical seismometers were set up at Palomar and tested for one week. The third instrument has not been located yet. A new galvanometer for multiple recording is being designed. Modifications of other equipment for the tripartite station are under way. Report No. 3 consists mainly in description and illustration of instrumental developments during period of the Report. Reports 5–9 cover various aspects of microseism research on the Pacific Coast, including (in Report No. 5) studies of sources of energy of microseisms recorded on Nov. 24, 1951 and Jan. 4, 1952 at a number of stations along the Pacific Coast from Victoria, B. C., to Palomar and Tacubaya, Mexico, in connection with ocean wave period and amplitude data measured at 3 points along the coast of Southern California. Conclusions are that energy came from tropical disturbance off tip of Lower California, though several cases of microseismic activity came from extratropical storms moving inland in the Pacific NW, but with a 1 or 2 days time lag (coinciding with period of heaviest breakers and

surf along coast). *Subject Headings:* **1. Microseism research 2. Palomar Mountain, Calif. 3. Pacific Coast, U. S. I. California Institute of Technology II. Contract AF 19(122)-436.**—*M.R.*

6.1–148 551.515:550.342

Gutenberg, B. (*Calif. Inst. of Tech., Pasadena*), **Microseisms, microbaroms, storms and waves in western North America.** *American Geophysical Union, Transactions*, 34(2):161–173, April **1953.** 9 figs., refs. **MH-BH**—Microseisms with periods from five to eight seconds recorded by long-period instruments at stations near the Pacific coast from November 29, 1951 to January 4, 1952 are discussed in their relation to meteorological conditions, ocean waves, and microbaroms. *Subject Headings:* **1. Microseisms 2. Ocean wave measurements 3. Atmospheric disturbances 4. Western North America.**—*Author's abstract.*

6.1–149 551.515:550.34

Tillotson, Ernest, **Microseisms.** *Nature*, London, 174(4424):302–303, Aug. 14, **1954.** ref. **DWB**—Review of: Symposium on Microseisms [Harriman, N. Y., Sept. 4–6, 1952]. *National Research Council, Wash., D. C., Publication*, 306, 1953. The various possibilities of origin by disturbances at sea are discussed. *Subject Heading:* **1. Microseisms.**—*C.E.P.B.*

6.1–150 551.515.1(261.2)

Heyer, E. and Grunewald, G., **Der Nordseeorkan vom 31. Januar bis 1. Februar 1953 und seine Ursachen.** [The hurricane in the North Sea from Jan. 31 to Feb. 1, 1953 and its causes.] *Zeitschrift für Meteorologie*, Berlin, 7(6):176–183, June **1953.** 9 figs. **MH-BH**—The weather situation which led to the hurricane that struck the southern end of the North Sea, in particular the English, Dutch and Belgian coasts between Jan. 31 and Feb. 1, 1953, was closely associated with the occlusion of a cold low aloft. From a detailed analysis of the development of the weather conditions both on the surface and aloft, including an analysis of the general circulation during the period, and from a consideration of other similar weather situations the author derives the conditions for such weather developments and criteria for forecasting them. These are (1) extensive high aloft over North America, which directs a strong cold air flow across the West Atlantic and thereby accelerates the east-west movement of pressure field; (2) the Siberian high aloft can be a blocking high or a quasi-stationary wedge over eastern Europe; (3) strong high aloft over north Siberia blocks the circulation produced by the North American low; (4) the presence of a surface low which provides a passage for the cold air flow from the north; (5) the presence of extensive quantities of cold air north of the surface low and (6) undisturbed advection of warm air at the anterior end of the surface low. *Subject Headings:* **1. North Sea storm (1953) 2. Hurricanes 3. General circulation 4. Northwest Europe.**—*I.L.D.*

6.1–151 551.515.1

§Rodewald, M., **Zur Entstehungsgeschichte des "Holland-Orkans."** [The history of the development of the "Dutch hurricane."] *Wetterlotse*, 72:113–129, June **1954.** 11 figs. **DWB**—The disastrous North Sea storm of Jan. 31–Feb. 1, 1953, is studied synoptically in great detail. Its growth from a warm front wave in the Atlantic on Jan. 29–30 is compared with model cyclone development (surface and upper air). The rapid deepening west of Scotland is attributed to the meeting of tongues of very cold Arctic air and very warm tropical air on Jan. 30. *Subject Headings:* **1. Barometric depressions 2. North Sea storm (1953) 3. North Atlantic.**—*C.E.P.B.*

6.1–152 551.515.8

Čadež, Marjan, **Jezera haldnog vazduha.** [Pools of cold air.] *Yugoslavia. Hidrometeorološka Služba. Hidrometeorološki Glasnik*, 1(1):3–13, **1948.** 4 figs., 5 refs., eqs. In Croatian. **DWB**—This article is a theoretical analysis of potential energy created in pools of cold air and of the dynamics of air flowing from such pools is offered in a mathematical approach mainly based on equations of MARGULES and BERNOULLI-BJERKNES. The physics of pools of cold air are explained in general terms and illustrated on schematic diagrams.

Some examples of winds occurring in Yugoslavia and originating in such large pools of cold air are discussed. Sample anemograph and thermograph recordings are reproduced. The phenomenon of local katabatic winds is explained. *Subject Headings:* **1. Cold pools 2. Orographic effects 3. Yugoslavia.**—*G.T. & A.A.*

6.1–153 551.515.8

Plaetschke, Johannes, **Zur Bildung der Kälteseen in Tälern und Mulden.** [On the formation of cold pools in valleys and hollows.] *Zeitschrift für Meteorologie*, 7(11):346–347, Nov. **1953.** 4 refs. **MH-BH**—Plaetschke agrees with Berg (*see* 2.11–169, Nov. 1951 and 4.2–164, Feb. 1953, *MAB*) that cold pools in valleys are not directly caused by the advection of cold air from higher located places but argues that drier though warmer air masses sliding down the slopes by mixing might decrease the dew point of the air layer near the ground in the hollows. The formation of dew might have the same effect so that the possibility for greater radiational cooling in depressions exists. Berg's indication that shelterbelts along the slopes are needless is criticized on the basis of these considerations. *Subject Headings:* **1. Nocturnal cooling 2. Orographic effects 3. Cold air pools. I. Berg, H.**—*A.A.*

6.1–154 551.515.8

Chamberlain, Lloyd W. and Roe, Charlotte L. (*WBAN Analysis Center, U. S. W. B., Wash., D. C.*), **The polar outbreak in mid-December.** *Monthly Weather Review*, 81(12):397–404, Dec. **1953.** 14 figs., table, 3 refs. **MH-BH**—The large cold anticyclone which moved down from the Canadian Arctic to the central and southeastern U. S. in mid-December 1953, brought large negative anomalies in temperature; and another outbreak on Dec. 28 which, though colder at source in Arctic than the former anticyclone, did not penetrate below the Great Lakes region owing to several factors associated with mid-troposphere circulation. The strong westerlies across the Pacific Northwest associated with a deep Gulf of Alaska cyclone and the lack of a deep low to the East, led to the breakening and splitting of the Dec. 28 anticyclone, whereas the shallow Dec. 15–19 high was advected rapidly southward by the strong northerly current behind the deep St. Lawrence low. *Subject Headings:* **1. Polar anticyclones 2. Polar outbreaks 3. Central United States.**—*M.R.*

6.1–155 551.515.8:551.515.11

†*§Chicago. Univ. Dept. of Meteorology, **General Circulation Project,** Contract N6ori-20, T.O. 2, Project NR 082003, Final Report, Pts. I and II, June 1953. 2 pts., separately paged. Pt. 1, Administrative Report [7 p.] Pt. II, Palmén, Erik H., **On the dynamics of cold air outbreaks in the Westerlies.** 15+p. 29 figs., 13 refs. List of publications under Task Order II, Pt. I, p. [3–7]. **DWB**—The dynamics of cold air outbreaks is considered theoretically and empirically with the vertical motions quantitatively considered in calculations of air parcel trajectories and consequent mass exchange. The situation which involved cold air outbreaks in April 3–7, 1950, Jan. 19–23, 1951 and Nov. 22–26, 1950 (historic Thanksgiving snowstorm), and which led to cyclogenesis are considered in detail with accompanying synoptic aerological analysis in the classical Palmén style. During the Nov. 1950 cyclone the tropopause descended to <600 mb in the center of the cold low. *Subject Headings:* **1. Synoptic aerological studies 2. Cold air outbreaks 3. Vertical motion 4. Low tropopause. I. Contract N6ori-20, Task Order 2 II. Palmén, Erik H.**—*M.R.*

6.1–156 551.515.8:551.577 551.509.3

§Freeman, John C., Jr. and Marcus, Julius, **United States Weather Bureau and Texas A. and M. Research Foundation Cooperative Project on case histories of synoptically important internal waves.** Texas. A. and M. College. Dept. of Oceanography, Contract Cwb-8322, Project 54, Final Report, May **1954.** 25 p. Contents: Marcus, J. and Freeman, J. C., Jr., **Lines of precipitation associated with synoptically important internal waves,** p. 1–9. 22 figs., 3 refs. Freeman, J. C., Jr., **The theory of the Newton break-through,** p. 10–16. 5 figs., 8 refs., eqs. Freeman, J. C., Jr. and Marcus, J., **Characteristic lines for the one dimensional problem of two internal layers in a rotating coordinate system,** p. 17–24. 5 figs., ref., eqs. **DWB**—Two cases of prefrontal lines of precipitation associated with internal waves in the atmosphere (March and May 1949) are synoptically analyzed. The analysis includes (1) sur-

face x-t diagrams, (2) isentropic x-t diagrams, (3) specific humidity x-t diagrams, (4) equivalent potential temperature diagrams and (5) cross-section z-t diagrams. As a result of the analysis, a schematic diagram is presented which illustrates the model prefrontal squall line proposed. The model is termed "Newton breakthrough"; its theory is developed in mathematical formulas and graphical illustrations showing the dynamic processes involved. According to the theory "convergence in moist air under an inversion with dry air above leads to the formation of a pressure jump and a spreading gravity wave. Behind or at that jump, the moist air rises high enough to be the same temperature as the dry air aloft. This is called a break-through. After the break-through occurs further convergence can lead to rapidly rising moist air through the break-through rather than spreading of the gravity wave." *Subject Headings:* **1. Rain squalls 2. Synoptic studies 3. Dynamics of the atmosphere. I. Texas. Agricultural and Mechanical College. Dept. of Oceanography II. Contract Cwb-8322.**—*G.T.*

6.1–157 551.515.8

*Gasser, O. (*Freiburg/Brsg.*), **Regeneration und Degeneration von Kaltfronten.** [Regeneration and degeneration of cold fronts.] *Baden. Landeswetterdienst, Jahresbericht mit Abhandlungen*, **1951/1952.** p. 83–92. 8 figs., 7 refs. **DWB**—The paper discusses a functional equation introduced by Petterssen in 1933 (*Geofysiske Publikasjoner*, 10(2), 1933), which expresses the individual change of a front as a sum of the local change (isallobar gradients at both sides of the front) and the advective change, dependent on the change of the pressure gradient and the "leading velocity." A list of possible combinations with characteristic isobar forms is given and a synoptic case discussed. *Subject Headings:* **1. Cold fronts 2. Front regeneration. I. Petterssen, Sverre.**—*A.A.*

RADIATION AND TEMPERATURE

RADIATION

See also: **Infrared radiation meters** (Stern, Schwartzman), 6.1–74; **Carbon dioxide absorption** (Howard), 6.1–115; **Turbulent diffusivity meas.** (Saissac), 6.1–132.

6.1–158 551.521

London, Julius, **Study of the atmospheric heat balance.** New York Univ. College of Engineering. Contract AF 19(122)-165, Progress Report 131.05 and 131.06, March and May **1951.** 2 pieces. figs., tables, refs., eqs. **DWB**—Report 131.05: The distribution of absorption of insolation by water vapor is computed as a function of height and latitude. By considering the infrared radiational loss by the atmosphere, previously computed, and the present calculations of absorption by insolation, it is shown that the entire troposphere constitutes an energy sink as far as radiative processes are concerned. It is found that at all latitudes, the largest radiational heat loss is in the middle troposphere. In Report 131.06: A model of the heat budget of the atmosphere for the Northern Hemisphere for March is presented. This model is based on previously derived distributions of the insolation received at the top of atmosphere and the net radiative flux of absorption of these radiative currents by the various atmospheric constituents. The model is also based on new estimates of the albedo of the atmosphere and of net outgoing radiation from stratosphere. *Subject Headings:* **1. Heat balance 2. Radiation balance 3. Albedo of atmosphere 4. Infrared radiation 5. Absorption by water vapor. I. New York University. College of Engineering II. Contract AF 19(122)165.**—*Author's abstract, M.R.*

6.1–159 551.521.1

Dirmhirn, Inge, **Zur Strahlungsverminderung an Windschutzstreifen.** [Radiational decrease near shelter belts.] *Wetter und Leben*, 5(11/12):208–213, Dec. **1953.** 4 tables. **MH-BH**—A study of the role of the shadows cast by shelter belts in reducing the amount of radiation incident upon plants with special reference to Vienna. Using the climatological radiation data of the Austrian Zentralanstalt für Meteorologie, the author calculated the relative daily sums of solar diffuse and global radiation in the vicinity of shelter belts of

different orientation at varying distances from the shelter belt (for cloud free days). In general the radiation loss due to shelter belts in the latitude of Vienna was found to be greatest at a distance equal to the height of the belt. The various differences in radiation loss for N–S and E–W oriented shelter belts and seasonal differences are discussed. *Subject Headings:* **1. Radiation loss 2. Shelter belt effects 3. Vienna, Austria.**—*I.L.D.*

6.1–160 551.521.11

*Aurén, T. E. and Depken, S., **The insolation as a function of latitude, declination and wavelength and some conclusions for the growth of plants in Scandinavia.** *Arkiv för Geofysik*, 2(4):91–96, Sept. 9, **1953.** 4 figs., 2 tables, 3 refs., 8 eqs. **DWB**—An extension of work of Aurén (*see item* 3.10–140, Oct. 1952, *MAB*) where total radiation was given for various places in Sweden. Total radiation per day for half of the year has been calculated for 55°, 60°, 65° and 70° for Sweden and it was found that total insolation increases with latitude after April 13. The average daily and average hourly radiation for the growing season (mean temp. >3°C) is shown in a graph for 12 stations in Sweden, arranged according to latitude. The stations at 70° get 30% more radiation per day during the growing season than do those at 55°, but the average hourly values decrease slightly (8%) from N to S. Finally, the radiation in 3 spectral areas (4000, 4800 and 6750 Å) is calculated for Jan.–June for 55° and 70°. The two longer wave lengths are important for plant growth. For 6750 Å the insolation at 70° exceeds that at 55° after March 30, but for 4800 Å only after May 3. For 4000 Å the insolation at high latitudes is always smaller than at low. *Subject Headings:* **1. Insolation regime at high latitudes 2. Spectral insolation data 3. Plant growth 4. Sweden.**—*M.R.*

6.1–161 551.521.11(493) 551.508.23

*Dogniaux, R., **Étude du climat de la radiation en Belgique.** [Study on radiation climate in Belgium.] *Ciel et Terre*, Uccle, 70(1/2):39–42, Jan./Feb. **1954.** 2 figs. **MH-BH**—Subjective limitations of the Campbell-Stokes heliograph (sunshine-recorder) are pointed out and advantages of the actinometric heliograph which is adjusted so it will always point toward the sun and will start recording when the insolation reaches 0.02 with 1 min are noted. The principles of "radiation climate" are discussed and tables showing decadal (10-day) and monthly values of possible and actual sunshine for period 1901–1930, corrected for difference between two above types of heliography and analyzed according to percentage of cases with values equal or more than a certain number of hours (1948-1952, 5 year means), are presented. Hourly frequencies (percentage of possible) for each 10-day period and month are also tabulated. *Subject Headings:* **1. Campbell-Stokes sunshine recorder 2. Actinometric heliograph 3. Sunshine duration data 4. Uccle, Belgium.**—*M.R.*

6.1–162 551.521.11

*Hand, Irving F. (*U. S. W. B., Blue Hill Observatory, Milton, Mass.*), **Insolation on cloudless days at the time of solstices and equinoxes.** *Heating and Ventilating*, N. Y., 51(2):97–100, Feb. **1954.** 18 figs. **DWB**—Charts are presented to show the daily hourly values of insolation on various surfaces at the time of the solstices and equinoxes over continental United States—specifically for latitudes 25°, 30°, 35°, 40°, 45° and 50°N. It is a continuation of an article by Hand in the Jan. 1950 issue of *Heating and Ventilating*. *Subject Headings:* **1. Insolation 2. United States.**—*Author's abstract.*

6.1–163 551.521.11

Neumann, J. (*Israel Met. Serv.*), **Computing insolation by empirical methods.** *Monthly Weather Review*, 81(10):330–331, Oct. **1953.** table, 6 refs. **MH-BH**—An empirical method described by Klein is applied to calculate insolation for the Lake Hefner, Okla., area for 1 year of the Lake Hefner Studies. For some of the months the computed values show unsatisfactory agreement with the observed amounts, but the computed annual total is in close accord with the observed annual total. It is suggested that agreement between the monthly values may be improved by introducing a curvilinear regression in the formula whereby account is taken of the depletion of insolation by sky coverage. *Subject Headings:* **1. Insolation 2. Lake Hefner, Okla.**—*Author's abstract.*

6.1–164 551.521.11

Sato, Takao (*Nagasaki Univ.*), **On the problem of the mathematical insolation. (III). Insolation falling on any declined plane.** *Meteorological Society of Japan, Journal*, 31(1):6–17, Jan. **1953.** 5 tables, eqs. **DWB**—The author presents detailed tables for the total solar radiation falling on an inclined plane during one day, dependent on the longitude of the sun, the altitude and azimuth of the normal to the slope, the geographical latitude and the atmospheric transmission coefficient. The time of the beginning and ending of insolation is also given. *Subject Headings:* **1. Insolation 2. Radiation on oriented slopes.**—*A.A.*

6.1–165 551.521.13:551.508.21:551.507.362

Rhode Island. State College. Upper Atmosphere Research Laboratory, **Insolation of the atmosphere.** Reports, Nos. 2, 4, 6–10, Jan. 30, July 31, **1949**–June 30, **1950.** 7 pieces. diagrs., graphs, photos., eqs., refs., bibliog. in Report No. 10. **DWB**—The details of each phase of this project, which extended over a period of 3 years, are contained in the first 9 Reports, and are summarized in some detail in the Final Report (No. 10). The purpose of the work was to develop accurate instruments for installation in the Aerobee rocket, and to install and test these instruments in actual rocket flights to great heights in order to determine more accurately the value of the solar constant. The present Smithsonian value of the solar constant (1.94 ly/min), the "standard" constant (1.88) and their determination are examined and criticized. A pyrheliometer was developed which made use of thermistors as sensing elements. Details of construction, wiring, installation in rockets and calibration are given in appendixes. Two actual flights were made at Halloman AFB, New Mexico on March 14 and May 26, 1950. The first flight was a failure, but the second reached 40.7 miles and gave values of 1.34 to 2.12 ly/min, with a large number centering around the average of 1.97. Good bibliographies on pyrheliometry, the work of the Smithsonian Institution, thermistors, bolometers, etc., their construction, testing and use, are contained in several of these reports. Excellent photographs and diagrams show mechanical and electrical construction of equipment. *Subject Headings:* **1. Solar constant 2. Rocket flights 3. Pyrheliometers 4. Thermistors. I. Albricht, John G. II. Quirk, Arthur L. III. Contract W28-099-ac-377 IV. Rhode Island. State College. Engineering Experiment Station V. Smithsonian Institution.**—*M.R.*

6.1–166 551.521.12:551.507.362

Rhode Island. University. Upper Atmosphere Research Laboratory. **Insolation of the atmosphere.** Contract AF 19(122)-249, Progress Reports, Nos. 1–5, June 25/Sept. 25, **1950** to June 25/Sept. 25, **1951.** 5 pieces. figs., tables, refs., eqs. **DWB**—Description of the development, design, construction and testing of equipment, for measurement of the intensity of solar radiation at high altitudes, installed in a biaxially controlled Aerobee rocket. For this purpose semiconductor (thermistor) bolometers and narrow band-pass amplifiers were improved. The instrument was calibrated with the Eppley tubular pyrheliometer (standard U. S. Weather Bureau instrument). Report No. 5 deals with the use of the equipment on balloon flights. Temperature data are given for the instrument block and the internal section of the gondola obtained from a balloon test flight. *Subject Headings:* **1. Solar radiation measurement 2. Rocket research 3. Upper atmosphere research. I. Quirk, Arthur L. II. Contract AF 19(122)-249.**—*A.A.*

6.1–167 551.521.14(26)

Burt, Wayne V., **Albedo over wind-roughened water.** *Journal of Meteorology*, 11(4):283–290, Aug. **1954.** 3 figs., 2 tables, 34 refs., 14 eqs. **DWB**—Using DUNTLEY's (1952) experimental determination of time distribution of surface slopes, direct and diffuse reflection of sun and sky radiation is calculated for various wind strengths and solar elevations. Effective albedo is then calculated in terms of an empirical turbidity factor which determines ratio of diffuse to direct light, solar elevation and roughness (dependent on wind strength). This gives albedo increasing with wind velocity at solar elevation 30° and decreasing at elevation 10°, in agreement with observations. *Subject Headings:* **1. Albedo of sea 2. Oceans.**—*C.E.P.B.*

6.1–168 551.521.14:551.578.46

Christie, A. W. (*Harmodsworth, England*), **The luminous directional reflectance of snow.** *Optical Society of America, Journal*, 43(7):621–622, July **1953.** fig., 5 refs., 12 eqs. **DWB**—Discussion of a paper published under the above title by W. E. K. Middleton and A. G. Mungall (*see item* 4.4–131, April 1953, *MAB*). After elaborating on several points of the Middleton-Mungall approximation theory of specular reflection, the author deals with the problem connected with the experimental determination of reflection data, especially those arising from the relative sizes of sample, source and receiver. Thus it is found that "the angles subtended by the source, the sample and the receiver" appear to be too large in the goniophotometer of Middleton and Mungall. Attention is also called to the fact that data obtained through the technique under review cannot be easily adapted to specific needs—for example, those of aviators. *Subject Headings:* **1. Albedo of snow 2. Goniophotometers. I. Middleton, W. E. K. II. Mungall, A. G.**—*G.T.*

6.1–169 551.521.14:551.578.46

Dunkle, R. V. and Gier, J. T., **Radiation in a diffusing medium with applications to snow.** California. Univ., Institute of Engineering Research, Contract DA-11-190-ENG-3, [Report], Nov. 15, **1953.** 14 p. table, 2 figs., 3 refs., eqs. **MH-BH**—A theoretical study of albedo (transmission and reflection) characteristics of clean snow of various ages. It is shown that melting, compaction, etc. alter the shape and size of crystals thus changing (lowering) the albedo until the limiting condition of homogenous ice with very low albedo is reached. The transmission through an ideal snow cover is directly related to albedo in an exponentially decreasing manner. An analysis is presented with appropriate tabular data to show the correlating factors, the first parameter is a characteristic of the surface snow condition and the second of the snow beneath the surface. Benford's (1946) results are compared with the author's in the above table. *Subject Headings:* **1. Albedo of snow 2. Radiation transmission in snowpack. I. California. Univ. Institute of Engineering Research II. Contract DA-11-190-ENG-3.**—*M.R.*

AIR TEMPERATURE

See also: **Large scale weather processes** (Böer), 6.1–90; **New England winters** (Dorsey), 6.1–91; **Air temp. forecasting** (Åmot), 6.1–107; **Eddy diffusion** (Rider), 6.1–131; **Temp. waves** (Heckert), 6.1–259.

6.1–170 551.524:519.24

Bergeiro Hargain, José María (*Serv. Met. and Istit. de Estudios Superiores, Uruguay*), **Importancia del "concepto inter-diurno" en los estudios de temperatura del aire.** [Importance of the "interdiurnal concept" in studies of air temperature.] *Revista Meteorológica, Montevideo*, 11(42/43):293–301, July/Oct. **1952.** 4 diagrs. **MH-BH**—The author demonstrates that in the conventional statistical treatment based on daily mean values, many typical climatological features are missed. This is the case even if mean values of extremes are included, because such extremes may occur at varying times of the day. The statistical method proposed in this paper is based on normal hourly values. Its practical application to the determination of interdiurnal variability, and to the identification of air masses and of climatic irregularities is explained. The concept "moment of the climatological daily mean" is discussed in connection with the author's method. Past and proposed use of the method in Uruguay is reported. *Subject Headings:* **1. Air temperatures 2. Interdiurnal temperature variations 3. Statistical techniques.**—*G.T.*

6.1–171 551.524:551.525:536.2

Dobryshman, E. M. and Belousov, S. L., **O dvusloĭnoĭ zadache teploprovodnosti vozdukh-pochva.** [The two layer problem of heat conductivity air-soil.] *Akademiia Nauk SSSR, Doklady*, Moscow, 93(6):1011–1014, Dec. 21, **1953.** fig., 3 refs., eqs. **DLC**—The heat regime in the air near the ground is determined mainly by the heat conductivity and radiation from the soil surface. Heat transfer caused by the slow motion of air masses could be neglected in many cases, including the case of radiation frost forecasting. Hence, the differential equations

describing the variations of deviations of air temperature T and soil temperature T'' from certain mean values T and T'' (close to 0°C) could be presented in a simplified form. The author gives equations and their solution for certain conditions. He confirms the results obtained mathematically by the empirical data. In conclusion, a sample calculation of night soil cooling is given. Knowing the thermal properties of soil and its initial surface temperature, the time when temperature falls to 0°C can be determined. *Subject Heading:* **1. Heat conductivity air-soil.**—*N.T.Z.*

6.1–172 551.524:628.8(73)

*Hay, A. Donald (*Franklin Inst. Labs. for Research & Dev.*), **Heating design temperatures.** *Heating, Piping and Air Conditioning*, Chicago, 25(5):104–105, May **1953.** fig., table. **DWB**—Design temperature recommended by a Technical Advisory Committee of the American Society of Heating and Ventilating Engineers is defined as "an outdoor temperature which is equaled or exceeded during 97½ percent of the hours in December, January, February and March." Design temperatures are tabulated for 66 American cities along with absolute and annual average minimum temperature, wind velocity at design temperature, and a design temperature derived from lowest recorded temperature (by adding 15° to it and rounding it off to the nearest 5 or 10 degrees). A chart of equal winter weather zones in the U. S. is also presented. *Subject Headings:* **1. Heating design 2. Winter temperatures 3. United States.**—*G.T.*

6.1–173 551.524(4,7)

Keller, R., **Die Temperaturjahreszeiten Europas.** [Annual European temperature regime.] *Erdkunde*, Bonn, 1(4/6):190–200, **1947.** 4 figs., 12 refs., map in pocket. **DLC**—A map 1:20,000,000 shows the months in the first half-year which are warmer than the corresponding months in the second half-year (Feb. warmer than Dec. and so forth). In order to explain the characteristic features, the radiation regime as well as oceanic and continental influences are discussed. A similar small scale map is also presented for North America. *Subject Headings:* **1. Air temperatures 2. Seasonal temperature variations 3. Europe 4. North America.**—*A.A.*

6.1–174 551.524:551.571:6

Kerner, G., **Klima und Beschädigung von Gütern.** [Climate and damage to merchandise.] *Hamburg. Seewetteramt. Witterung in Übersee*, 1(8):1–3, Aug. **1953.** fig., 3 refs. **DWB**—On the basis of a formula by C. E. P. Brooks, a diagram is given of damage index to materials on a scale of 0–100 for humidity 65–100% and temperature 5–60°C. Limits of sultriness and comfort are superposed. *Subject Headings:* **1. Applied climatology 2. Humidity effects. I. Brooks, C. E. P.**—*C.E.P.B.*

6.1–175 551.524:551.577.38

Lammert, Walter (*Einbeck*), **Wie sich unser Klima ändert.** [How does our climate change.] *Wasserwirtschaft*, 44(4):105–106, Jan. **1954.** **DWB**—In spite of the current idea that Central Europe is becoming drier, the fact is that there has been more precipitation in the annual average (500 stations in Germany) in the period 1931–50 than from 1881–1930. However the summers have been somewhat drier. The main factor, aside from greater water use and depletion of ground water resources, has been the increased evaporation as a result of the higher annual (average) temperature. Thus it would take an increase in rainfall to maintain constant soil moisture and water supply. *Subject Headings:* **1. Drought 2. Temperature trends 3. Water supply 4. Evaporation 5. Germany.**—*M.R.*

6.1–176 551.524:551.23

Marler, George D., **Does the cold of winter affect the thermal intensity of the hot springs in Yellowstone Park?** *American Journal of Science*, 252(1):38–54, Jan. **1954.** table, plate, 4 refs. **DWB**—The seasonal range in temperature is as great in Yellowstone Park as it is anywhere, yet there is no evidence of any seasonal change in the temperature of geysers there. Average temperature of 60 hot springs and geysers in 1925–30 are compared with 1951–52

average. In most cases there has been an increase in temperature, but in 20% of the cases there has been an equally great decrease. The data and conclusions are analyzed critically. *Subject Headings:* **1. Thermal intensity of geysers 2. Low temperature effects 3. Yellowstone National Park, Wyo.**—*M.R.*

6.1–177 551.524:534:629.13

Os efeitos climáticos sôbre os records de velocidade. [Climatic effects on speed records.] *Aviacão*, Rio de Janeiro, 16(190):17, Nov. **1953. DWB**—Brief note on effect of climatic factors such as temperature on the speed of sound and hence on the speed of planes flying in the velocity range close to the speed of sound. The difference between 74°F and 105°F (a common range of temperature at airports in Southwest U. S.) makes a difference of 21 mph in the speed of sound. *Subject Headings:* **1. Temperature effects on aircraft speed 2. Sound velocity 3. Jet aircraft speed records.**—*M.R.*

6.1–178 551.524(492)

*Van der Bijl, Willem, **Gemiddelden, standaarddeviaties en onderlinge correlaties van de maandelijkse temperaturen te De Bilt.** [Mean, standard deviation and intercorrelation of the monthly temperature at De Bilt.] (In: Netherlands. (K.) Meteorologisch Instituut, **1854 Koninklijk Nederlands Meteorologisch Instituut, 1954.** 'S-Gravenhage, **1954.** p. 320–352. 7 figs., 12 tables, 10 refs.) **DWB**—Labrijn (1945) has published the monthly mean temperatures at De Bilt since 1735. Their averages, standard deviations and internal correlation coefficients have been computed in this paper for several periods of different lengths, up to 1950. The bulk of the information is contained in the 12 tables and 7 figures. *Subject Headings:* **1. Air temperatures 2. Temperature data 3. Long period records 4. De Bilt, Netherland.**—*Author's abstract.*

6.1–179 551.524.7(931)

*Porter, Elizabeth M., **Determination of temperature frequency distributions for the main isobaric levels.** *New Zealand. Meteorological Office, Circular Note*, No. 63, Oct. 15, **1950.** 9 p. 2 figs., tables, 2 refs. **DWB**—Using mean monthly temperatures taken from adiabatic charts for the 700, 500, 300 and 150 mb levels for several stations in and near New Zealand, the author computed temperature percentage frequencies over the range of temperature for the different atmospheric levels. Tables give the mean monthly temperatures and monthly upper and lower quartiles and median temperature values for the several stations. The application of the frequency distribution of temperature for these isobaric levels to air mass analysis is discussed. *Subject Headings:* **1. Temperature frequency distribution 2. New Zealand.**—*I.L.D.*

6.1–180 551.524.3(899)

*Boerger, Alberto, **Cambios bruscos de la temperatura registrados en "La Estanzuela" desde 1915 a 1953.** [Sudden changes of temperature recorded in La Estanzuela from 1915 to 1953.] *Revista Meteorológica*, Montevideo, 12(44/45):38–47, June/Dec. **1953.** 2 figs., 6 refs. **MH-BH**—Sudden drops of temperature recorded at the Phytological Institute "La Estanzuela" (Dept. of Colonia, Uruguay) during the period 1915–1953 are listed. The list includes 33 cases of instantaneous drop ranging from 7 to 15°C, 28 half-hour drops of 8–14°C, 45 cases of less sudden drops (1–2 hours) ranging from 8 to 17°C and 7 slow drops (2–3 hours) ranging from 8 to 17°C. The dates of the occurrences of these temperature drops (mostly during the summer months) are indicated. *Subject Headings:* **1. Temperature drop 2. La Estanzuela, Uruguay.**—*G.T.*

6.1–181 551.524.37:551.584.31(43)

Reichelt, Günther, **Über Spätfrostschäden im Grünland in Abhängigkeit vom Relief, am Beispiel der Baar.** [Late frost damage in the countryside in relation to relief, exemplified by the Baar.] *Wetter und Leben*, 6(1/2):1–6, March **1954.** 2 figs., 4 tables, 10 refs. **DWB**—A method is described for deriving quantitative expressions of the intensity of frost damage caused by late frosts occurring in the grassland of the Baar near Donaueschingen. It involves

the use of specific plant associations on particular exposures and elevations, assigning a numerical value to each part of the plant damaged, adding these individual values and dividing by 100. The author discusses the effect of frost on individual plants and upon individual species within different associations and the relationship of frost damage to relief and exposure. *Subject Headings:* **1. Microclimatology 2. Orographic effects 3. Frost damage intensity 4. Germany.**—*I.L.D.*

SOIL TEMPERATURE

See also: **Heat conductivity air-soil** (Dobryshman, Belousov), 6.1–171.

6.1–182 551.525.4

Hutchings, J. W. and Hamlin, G., **Note on the soil diffusivity at Earnscleugh, Central Otago.** *New Zealand. Meteorological Office, Circular Note*, No. 62, Aug. 11, **1950.** 2 p. table. **DWB**—Soil temperatures were measured at 4″ and 8″ for a period of a year; the soil diffusivity was computed over these depths and compared with the value at 3″ and 5″ obtained previously. The mean monthly maximum and minimum temperatures for the given depths, the mean daily ranges and the rates of ranges for the two depths are given in a table. The value of range ratio is fairly consistent for the year and the mean value of 2.6 corresponds to a diffusivity $K=4.0\times10^{-3}$ c.g.s. units which is in good agreement with previously calculated values. *Subject Headings:* **1. Soil diffusivity 2. New Zealand.**—*I.L.D.*

6.1–183 551.525.4:631.43

Lettau, Heinz (*Air Force Cambridge Research Center, Cambridge, Mass.*), **Improved models of thermal diffusion in the soil.** *American Geophysical Union, Transactions*, 35(1):121–132, Feb. **1954.** 3 figs., 6 tables, refs. p. 131–132, 36 eqs. **MH-BH**—It is shown that the non-homogeneous case of soil-heat conduction, that is when soil-heat conductivity and capacity are functions of depth, can be treated rigorously. An exact formula is derived which gives the thermal diffusivity of the soil as a function of depth, on the basis of Fourier coefficients of diurnal courses of soil temperature at a variety of depths. By employment of the new model of soil-heat diffusion one avoids misleading results which are obtained when the classical model of heat diffusion in a solid conductor is applied to natural soil indiscriminately. The case of depth-time varying thermal diffusivity can only be solved in approximate form. The practical application of the classical and the two new models are discussed with the aid of soil temperature data obtained by the Johns Hopkins Laboratory of Climatology, Seabrook, N. J. *Subject Headings:* **1. Soil heat conductivity 2. Thermal diffusivity 3. Soil temperatures.**—*Author's abstract.*

SEA TEMPERATURES

See also: **Air temp. forecasting** (Åmot), 6.1–107.

6.1–184 551.526.6(261.2):551.465

Dietrich, G., **Einfluss der Gezeitenstromturbulenz auf die hydrographische Schichtung der Nordsee.** [Influence of tidal turbulence on the hydrographic stratification of the North Sea.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 7:391–405, **1954.** 6 figs., 13 refs. German, English and French summaries p. 391–392. **MH-BH**—The critical vertical density gradient for suppressing tidal current bottom turbulence is compared with the vertical density gradient due to heat transport in upper turbulent layer due to wind, and the depth at which they become equal is charted. The effect on the annual variation of surface temperature of the North Sea is examined. *Subject Headings:* **1. Sea temperatures 2. Tidal currents 3. North Sea.**—*C.E.P.B.*

6.1–185 551.526.6:551.593.7

Dmitriev, A. A., **Nabliudeniia termicheskoĭ tsirkuliatsii svetopoliarizatsionnym metodom i ee avtokolebatel'naia skhema.** [Observations of thermal circulation by the method of light polarization and its auto-fluctuating scheme.] *Akademiia Nauk SSSR, Izvestiia, Ser.*

Geofizicheskaia, No. 5:429–444, **1953.** 4 figs., 5 refs., 33 eqs. **DLC**—Schemes of atmospheric currents for cases of symmetric and asymmetric distribution of temperatures in sea water near an island are given. These schemes were derived from the observations of thermic circulation on flat vertical models made by light polarization method. Results are compared with published data pertaining to natural conditions. *Subject Headings:* **1. Sea temperature measurement techniques 2. Polarization.**—*N.T.Z.*

6.1–186 551.526.6:551.464(261)

Fuglister, F. C. (*Woods Hole Oceanographic Inst.*), **Average temperature and salinity at a depth of 200 meters in the North Atlantic.** *Tellus*, 6(1):46–58, Feb. **1954.** 3 figs., 8 charts, 3 refs. **MH-BH**—New charts are presented showing the average temperature and average salinity at a depth of 200 m in the North Atlantic. These are compared with charts published by WÜST and DEFANT in 1936 and it is shown that, over most of the ocean, conditions are nearly constant at this depth. Attention is focused on the areas of changing temperature where the major ocean currents exist. It is shown that important details are obscured by the averaging process. The range of observed temperature is charted and supplements the information given by the average charts. The standard deviation from the mean temperature, calculated for two portions of the Gulf Stream System, indicates that when more observations are available such calculations may be of use in studying the major ocean current systems. Temperature anomalies from the mean for each degree of latitude are plotted and compared with data published by WÜST in 1937. *Subject Headings:* **1. Ocean temperatures 2. Salinity 3. Ocean currents 4. North Atlantic.**—*Author's abstract.*

6.1–187 551.481.1(09) 551.526.8(09)

†Czepa, Otto, **Die Entwicklung der physikalischen Limnologie.** [The development of physical limnology.] *Forschungen und Fortschritte*, Berlin, 28(9):269–276, Sept. **1954.** 61 refs. **DLC**—This well documented history begins with the fundamental work of F. A. FOREL between 1868 and 1912, especially on Leman (L. of Geneva) but origins are traced much further back. The temperature discontinuity discovered in 1889 (E. RICHTER) and observations of seiches mainly since 1803 (P. L. VAUCHER) are described. Measurement of penetration of radiation into lakes goes back to FOREL and E. SARASIN in 1873. Early in the 20th century great activity began in many countries especially in the study of seiches, the radiation balance and the discontinuity layer. *Subject Headings:* **1. History of limnology 2. Lake temperatures 3. Seiches. I. Forel, F. A. II. Richter, E. III. Vaucher, L. IV. Sarasin, E.**—*C.E.P.B.*

PRESSURE AND WIND

PRESSURE

See also: **Met. charts** (Carlin), 6.1–31.

6.1–188 551.542:629.13

Perkins, D. T., **Wave-front method of minimal flight planning.** *U. S. Air Weather Service, Technical Report*, No. 105-60, Oct. **1949.** 7 p. 9 figs., plate (fold.). **DWB**—In this report a geometrical method for minimal-flight planning, formally similar to the application of Huygens' Principle, is described. Aside from the obvious desirability of a simple geometrical construction applied to the contour field, this method possesses several features of particular interest: (a) a geometrical demonstration of the basic differential equation of a relatively minimal path is easily obtained; (b) the construction yields the absolutely minimal path, which can be obtained by differential methods only by a final step of comparison between several relatively minimal paths; (c) the construction affords a simple and practical extension to three-dimensional flight planning, a problem which appears to be not within the practical scope of the differential method. No attempt has been made in this report to establish a routine procedure for flight planning by the wave-front method. It is anticipated that users of this method will adapt the general principles described herein to their own particular problem. *Subject Headings:* **1. Pressure pattern flying 2. Flight planning.**—*Author's abstract.*

6.1–189 551.543:551.515.4

Brooks, Edward M. (*St. Louis Univ., St. Louis*), **Characteristics of thunderstorm microbarograms.** *American Geophysical Union, Transactions*, 35(3):413–419, June **1954.** 6 figs., 2 tables, 6 refs. **MH-BH**—Each of 34 Friez microbarograph records of pressure variations associated with showers or thundershowers in the past five years near St. Louis has individuality, yet they indicate that there is an idealized thunderstorm microbarogram, which can be subdivided into five pressure stages. Each record exhibits at least one of the stages. Causes of the pressure changes are discussed. *Subject Headings:* **1. Pressure variations 2. Thunderstorms 3. Thunderstorm microbarograms 4. St. Louis, Missouri.**—*Author's abstract.*

6.1–190 551.543:523.74

*Nordø, Jack (*Inst. for Weather and Climate Res.*), **Statistical discussion of a possible connection between solar activity and sea-level pressure.** *Norske Videnskaps-Akademi i Oslo. Institutt vor Vaer- og Klimaforskning, Publications*, No. 2, **1953.** 41 p. 2 figs., 24 tables, 23 refs. **MH-BH**—Significance tests are explained and a rather exhaustive treatment of persistence in pressure anomalies is given by computing autocorrelation series from day to day and considering seasonal variations. The probable effect of chromospheric eruptions on pressure changes at Oslo (1935–52) is analyzed in detail, computing the statistical criteria for pressure tendencies up to 120 hours for day and night flares during all seasons. The result of this very substantial investigation is that there is no convincing indication for the effect of solar flares on changes of sea level pressure. A much greater number of years would be required to reveal any effect. Some recent related studies by the Dülls, Valnieček, Craig, Flohn, Wexler, Baur and others are critically discussed. In only a few cases was the significance level better than 5%. *Subject Headings:* **1. Solar activity 2. Statistical studies 3. Persistence 4. Pressure anomalies 5. Oslo, Norway.**—*A.A.*

6.1–191 551.543(969)

*Pyle, Robert L., **Pressure variations on Oahu Island.** California Univ. at L. A., Institute of Geophysics. Oahu Research Center, Contract AF 19(604)-546, Scientific Report No. 2, March **1954.** 28 p. 15 figs. **MH-BH**—A field project to obtain continuous microbarograph records from carefully selected points on Oahu Island was conducted during a two-week period in June 1953. Procedures and instrumentation are described in detail. Pressure variations on Oahu are divided into 3 categories according to degree of regularity. It is demonstrated that two weeks of tropical data are adequate to compute the amplitude and phase of components of 24-, 12-, 8-, 6- and 4-hour periods. Components of 12-, 8- and 4-hour periods are shown to be nearly equal at all stations, regardless of orographic exposure. The 24-hour (diurnal) component varies greatly over the island, and also varies at each stations from day to day. It is demonstrated that orographic factors exert their influence on the pressure through the diurnal component and that variations in this component are primarily responsible for the observed unrepresentative time and space variations in the pressure field. *Subject Headings:* **1. Pressure microvariations 2. Orographic influences 3. Oahu Island, Hawaii Islands. I. California Univ. at L. A., Institute of Geophysics. Oahu Research Center II. Contract AF 19(604)-456.**—*From author's abstract.*

6.1–192 551.543:551.541

*Roschke, W. H., Jr. (*St. Louis Univ., St. Louis*), **The propagation of short period air pressure micro-oscillations.** *American Meteorological Society, Bulletin*, 35(1):20–25, Jan. **1954.** 7 figs., table, 12 refs. **MH-BH**—Air pressure micro-oscillations of the short period (<1 min) type as recorded by the Macelwane electromagnetic microbarograph at Florrisant, Mo., near St. Louis were found to be propagated with a speed averaging between 7 and 25 mph which is of the same order as the wind speed in the lower layers of air, and in the same direction as the wind. The period was between 10 and 25 sec and the optimum spacing of microbarographs about 60 ft, although micro-oscillations can be identified with spacing anywhere from 4 to 80 ft. *Subject Headings:* **1. Pressure microvariations 2. Microbarographs 3. Macelwane electromagnetic microbarographs.**—*M.R.*

TURBULENCE

See also: **All about sea** (Lane), 6.1–3; **Turbulent exchange meas.** (Parson, Bunker), 6.1–78; **Isotopic characteristics of turbulence** (Monin, Obukhov), 6.1–130; **Eddy diffusion** (Rider), 6.1–131; **Turbulent diffusivity meas.** (Saissac), 6.1–132.

6.1–193 551.551 532.517.4

Batchelor, G. K. and Proudman, Ian, **The effect of rapid distortion of a fluid in turbulent motion.** *Quarterly Journal of Mechanics and Applied Mathematics*, 7(1):83–103, March 1954. 3 figs., 7 refs., 60 eqs. **DWB**—The paper calculates the changes in homogeneous turbulent motion in a fluid subjected to a superimposed uniform distortion. It gives valid approximations for turbulence in wind tunnel streams but does not appear to have any direct meteorological application. *Subject Headings:* **1. Fluid dynamics 2. Turbulence.**—*C.E.P.B.*

6.1–194 551.551:551.558.1

Bunker, A. F. (*Woods Hole Oceanog. Inst., Woods Hole, Mass.*), **Recognition of the presence of convective currents within a nonsaturated turbulent layer of the atmosphere.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:309–322, Dec. 1952. figs., tables, eqs. **DWB**—Measurements with a psychrograph and a vertical water column accelerometer were made from an airplane. The correlation coefficient between simultaneous values of air temperature and the turbulence of the air seems to be a good indicator for the presence of convective currents. The correlation coefficient is almost 1 for a cloud layer and very low (0.0 to 0.2) for air with neutral stability as well as between clouds. An air mass heated from below shows values from 0.4 to 0.8. The sizes of convection cells can be characterized by the effect of the averaging interval on the correlation coefficient. *Subject Headings:* **1. Turbulence correlations 2. Convective currents 3. Turbulence in clouds.**—*A.A.*

6.1–195 551.551

Bunker, A. F., **Turbulence research at W.H.O.I.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:305–307, Dec. 1952. **DWB**—The Woods Hole Oceanographic Institution studies the accumulation of water vapor in the atmosphere as the air flows from land out to sea by means of airplane soundings. Other work deals with turbulent temperature, wind and pressure fluctuations. No details are given. *Subject Headings:* **1. Turbulence research 2. Turbulent fluctuations. I. Woods Hole Oceanographic Institution.**—*A.A.*

6.1–196 551.551:551.513

Inoue, Ei-ichi, **The application of the turbulence theory to the large-scale atmospheric phenomena.** *Geophysical Magazine*, Tokyo, 23(1):1–14, Dec. 1951. 5 figs., 26 refs. **MH-BH**—A systematic outline of the statistical turbulence theory applied to large scale eddies. The structure of a turbulent fluid is briefly described. The pressure and temperature spectrum of planetary waves and the statistical nature of the zonal index are discussed. The lifetime of planetary eddies is proportional to their scale and inversely proportional to their velocity. Examples of atmospheric and oceanic eddies are given. The relationship between the horizontal and the vertical structure of the atmosphere is discussed. *Subject Headings:* **1. Turbulence theory 2. Eddies.**—*A.A.*

6.1–197 551.551:533.15

Inoue, Ei-ichi (*Geophysical Institute, Tokyo Univ.*), **On the Lagrangian correlation coefficient for turbulent diffusion and its application to atmospheric diffusion phenomena.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:397–413, Dec. 1952. figs., tables, 18 refs., 75 eqs. **DWB**—Studies relationship between Lagrangian correlation coefficient R and the structure of a turbulent field. R can be obtained as the Fourier transform of the spectral function F of turbulons. The form of F is derived for small, intermediate and large ranges. A good approximation is $R = e - \xi/t_0$; t_0—life time of the largest turbulon. Turbulent diffusion in the atmosphere both in the horizontal and vertical direction is discussed on the basis of the simpler relation $R = 1 - \xi/t_0$, taking into account the distance

from the ground for the vertical diffusion. Some results for smoke diffusion are presented. *Subject Headings:* **1. Turbulence correlations 2. Turbulent diffusion 3. Statistical theory of turbulence.**—*A.A.*

6.1–198 551.551

Inoue, Ei-ichi, **On the role of averaging time in the study of atmospheric turbulence.** Texas. Agricultural and Mechanical College. Dept. of Oceanography. Contract AF 19(604)-997, Scientific Report, No. 2, March **1954.** 13 p. 9 refs., eqs. **DWB**—Problems concerning the averaging procedure in the study of atmospheric turbulence are dealt with. These are shown to arise from the large scale and great intensity of atmospheric turbulence. Both of these conditions give rise to a number of relations between the averaging time and the apparent characteristics of the turbulence observed during the averaging time. On the assumption that the effective largest turbulon measured is dependent upon the averaging time and that it is in the intermediate range of the similarity theory of turbulence, some possible functional relations between averaging time and turbulence parameters are presented. *Subject Headings:* **1. Atmospheric turbulence 2. Turbulence parameters. I. Texas. Agricultural and Mechanical College. Dept. of Oceanography II. Contract AF 19(604)-997.**—*Author's abstract.*

6.1–199 551.551

Inoue, Ei-ichi, **On the smallest scale turbulence in the atmosphere.** Texas. Agricultural and Mechanical College. Dept. of Oceanography. Contract N7onr-48705, NR 082-011, Technical Report, No. 1; Contract AF 19(604)-997, Scientific Report, No. 1, March **1954.** 13 p. 13 refs., eqs. **DWB**—This paper deals with the smallest scale of turbulence in any turbulent flow, in particular that in the atmosphere near the ground, to provide guidance in designing instrumentation for measurements of atmospheric turbulence. Discrepancies between G. I. TAYLOR's "smallest eddy" or "microscale of turbulence" and the concept of "the smallest turbulon" or "internal scale of turbulence," arising from the modern similarity theory of turbulence are pointed out. Physical characteristics of the smallest turbulon in the atmosphere near the ground are studied, and their practical applications discussed. *Subject Headings:* **1. Micrometeorological turbulence 2. Turbulence instrumentation. I. Texas. Agricultural and Mechanical College. Dept. of Oceanography II. Contract N7onr-48705 III. Contract AF 19(604)-997.**—*Author's abstract.*

6.1–200 551.551

Inoue, Ei-ichi, **Some remarks on the Lagrangian correlation coefficient of turbulent diffusion in a wind tunnel flow.** *Collected Meteorological Papers*, Tokyo, 4(1), Jan. **1953.** 18 refs., 4 eqs. **DWB.** Also in: *Physical Society of Japan, Journal*, 7(5):503–507, Sept./Oct. **1952. DWB**—The mathematical properties of the correlation function for the decay of turbulence behind a grid are discussed at first for "non dynamical substances," which follow the movements even of the smallest eddies. The author points out that the difference between the dynamical life-time and the thermal one of eddies must be considered computing the correlation function. Sometimes also the geometrical scale of diffused substances is important (soap bubbles). The averaging time must be considered for atmospheric and oceanic turbulence. *Subject Heading:* **1. Turbulence correlations.**—*A.A.*

6.1–201 551.551

Lettau, Heinz (*G.R.D., Air Force Cambridge Res. Center, Cambridge, Mass.*), **The present position of selected turbulence problems in the atmospheric boundary layer.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:49–95, Dec. **1952.** figs., tables, refs., eqs. **DWB**—This work is essentially a development and modification of the author's theory published in 1949 (*see item* 7–37, July 1950, *MAB*). Relations developed previously in the literature are either special cases of the general theory or merely interpolation formulas. PASQUILL's experimental data (*see item* K–173 and *item* 10–104, Nov. and Oct. 1950, *MAB*) on the distribution of meteorological elements up to 200 cm and the simultaneous heat budget of the earth's surface are used in order to verify successfully a modification of the laws governing an adiabatic atmosphere for superadiabatic and stable cases. A simple

model of nonadiabatic surface layer turbulence with a separation of geometrical, dynamical and thermal factors is derived, which can be used by the practical forecaster. For this purpose the mixing velocity is studied. It is shown also that one parameter is sufficient to characterize the effects of thermal stratification, while the conventional Richardson number is a complicated function of height. One of the supposed results is that the intensity of turbulence close to the ground increases from superadiabatic to neutral to inversional thermal stratification. Some measurements support this conclusion, while measurements at the conventional 200 cm height might contradict it. The latter fact is explained by a changing height of the boundary layer itself. The density stratification in the superadiabatic surface layer is derived, giving a good agreement with results of F. A. Brooks (*see item* 5.1–3, Jan. 1954, *MAB*) for the layer of maximum density. Anomalous refraction of optical days and mirages in particular could be predicted from the theory. *Subject Headings:* **1. Turbulence theory 2. Boundary layer 3. Turbulence forecasting.**—*A.A.*

6.1–202 551.551:533.17

Ogura, Yoshimitsu (*Geophysical Inst., Tokyo Univ.*), **The relation between the space- and time-correlation functions in a turbulent flow.** *Meteorological Society of Japan, Journal,* 2nd Ser., 31(11/12):355–369, Dec. **1953.** 5 refs., 60 eqs. **MH-BH**—Making use of a simple mathematical model concerning the form of motion associated with each turbulent component, the relation between the space-correlation function and the Eulerian time-correlation function is theoretically studied. While the former correlation $R(r)$ is given by $1-R(r)\sim r^{2/3}$, the latter $R(t)$ is given by $1-R(t)\sim t^m$ and the value of m is a function of $U/\sqrt{\bar{u}^2}$, where U and $\sqrt{\bar{u}^2}$ are the velocity of the mean flow and the turbulent velocity, respectively. The values of m lie between $\frac{2}{3}$ and 1. The minimum $m=\frac{2}{3}$ occurs when $U\gg\sqrt{\bar{u}^2}$, and the maximum value $m=1$ when $U\ll\sqrt{\bar{u}^2}$. It is further stressed that the functional form of Lagrangian correlation is exactly the same as that of Eulerian correlation in the case of $U\ll\sqrt{\bar{u}^2}$, insofar as the decay and rebuilding process of turbulence plays a predominant part in both correlations. *Subject Headings:* **1. Turbulent flow 2. Turbulence theory.**—*Author's abstract.*

6.1–203 551.551:551.511

Poppendiek, H. F. and Vehrencamp, J. E. (*Univ. of Calif. at Los Angeles*), **Remarks on atmospheric turbulence research at the University of California, Los Angeles.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers,* No. 19:381–395, Dec. **1952.** fig., 11 refs., eqs. **DWB**—Measurements of heat and momentum transfer of soil heat flow, solar and atmospheric radiation and wind shear were made over a dry lake bed by means of newly developed instruments, described in some detail. Especially interesting is the shear meter for the measurement of surface drag. A systematic variation for time of drag was found in the ratio between the exchange coefficient for heat and momentum, this ratio being higher in the middle of the day. *Subject Headings:* **1. Turbulence measurements 2. Surface drag meters 3. Turbulent exchange.**—*A.A.*

6.1–204 551.551:551.596.1

Richardson, E. G., **The fine structure of atmospheric turbulence in relation to the propagation of sound over the ground.** *Royal Society of London, Proceedings, Ser. A,* 203(1073):149–164, Sept. 22, **1950.** 8 figs., 2 plates, 4 tables, 18 refs. **DLC**—With the aid of hot-wire instruments, measurements have been made of the fluctuations of the wind in the lowest 50 ft of the atmosphere and, in particular, of the mean eddy diameter and of the ratio of vertical and cross-wind components in such fluctuations. It appears that the turbulent elements near the ground are smaller in size and more nearly isotropic in character than those higher up. Some correlation between the temperature and velocity fluctuations near the ground has been observed. Simultaneous measurements of the fluctuations in sound intensity at a distance from a steady source and of the intervening gustiness have been made in order to discuss the relation between sound scattering and background noise, on the one hand, and the intensity and scale of the prevailing turbulence on the other. The effect of the latter on the phase relationships between the signals picked up at two points is also demonstrated. *Subject Headings:* **1. Atmospheric turbulence 2. Acoustical propagation.**—*Author's abstract.*

6.1–205 551.551:533.6

Sutton, O. G. (*Military Coll. of Sci., Shrivenham, Eng.*), **Some unsolved problems in the physics of the earth's boundary layer.** *U. S. Air Force. Cambridge Research Center, Geophysical Research Papers*, No. 19:25–31, Dec. **1952.** refs. **DWB**—Outlines six problems requiring detailed observation or instrumental development: measurement of velocity fluctuations, effect of roughness and stability on the eddy spectrum, the variation of eddy velocities, shearing stress and heat transfer with height, the Richardson number and smoke diffusion from elevated sources. The theoretical problems include the exact solution of the three-dimensional equation of diffusion and an additional analysis of the heat transfer equation. The subsequent discussion was mainly devoted to the Richardson number. *Subject Headings:* **1. Turbulence research 2. Boundary layer 3. Richardson number.**—*A.A.*

6.1–206 551.551:551.508.51:551.507.352

*Tolefson, H. B.; Pratt, K. G. and Thompson, J. K., **An experimental study of the relation between airplane and wind-vane measurements of atmospheric turbulence.** *U. S. NACA, Research Memorandum*, L52L29b, July 17, **1953.** 20 p. 3 tables, 8 figs., ref. **DWB**—Simultaneous measurements of horizontal-velocity fluctuations derived from the motions of wind vanes mounted on a tower and vertical-velocity fluctuations derived from the vertical accelerations of an airplane flying in the immediate vicinity of the tower have been examined for relations between the horizontal gusts measured with the vanes and the vertical gusts measured with the airplane. The measurements were made at the Brookhaven National Laboratory in clear air and on generally windy days. The results indicate that good correlation is obtained between the horizontal gusts evaluated from the vane motions and the vertical gusts measured by the airplane provided that the gusts selected in both cases are of about the same wave length. It appears from these results that airplane measurements of turbulence can be interpreted in terms of surface measurements to extend the scope of data available to either the engineer or the meteorologist. *Subject Headings:* **1. Turbulence measurement 2. Wind vanes 3. Airplane observations 4. Gusts.**—*Authors' abstract.*

6.1–207 551.551:551.501.8:629.13

Tolefson, H. B. (*NACA Langley Aero. Lab., Langley Field, Va.*), **Some possible reductions in gust loads through use of radar in transport airplanes.** *American Meteorological Society, Bulletin*, 34(5):187–191, May **1953.** 4 figs., 5 refs. **DWB**—Turbulence data obtained under different weather conditions by means of air-borne radar were analyzed in order to determine possible reduction in gust loads and increases in passenger comfort attainable through the use of radar in detecting and avoiding storm areas. The use of air-borne 3 cm radar for thunderstorm detection would lead to a reduction in gusts which are encountered in clear air or convective activity. Its use in thunderstorm avoidance might result in a 10% reduction in maximum gust loads. Contour radar would aid in selecting the smoothest flight path through storms that could not be avoided. *Subject Headings:* **1. Air-borne radar equipment 2. Radar storm detection 3. Thunderstorm turbulence 4. Gust loads 5. Aeronautical meteorology.**—*I.L.D.*

6.1–208 551.551

Uberoi, Mahinder S. (*Dept. of Aeronautics, Johns Hopkins Univ.*), **Eddy turbulence and random sound in a compressible fluid.** *Cambridge Philosophical Society, London, Proceedings*, 49(4):731–734, Oct. **1953.** 3 refs., 17 eqs. **DWB**—Theoretical discussion showing that any turbulence field can be decomposed into two uncorrelated parts, one part corresponding to rotational fluctuating velocities, the eddy turbulence, the other to fluctuating acoustical waves, called by the author the random sound. A general proof is given instead of Moyal's approach, which was based on a special representation of a random field (*see item* 4A–187, Jan. 1953, *MAB*). *Subject Heading:* **1. Turbulence theory.**—*A.A.*

6.1–209 551.551:629.13

Walker, Walter G. (*NACA. Langley Aero. Lab., Langley Field, Va.*), **Gust loads and operating airspeeds of one type of four-engine transport airplane on three routes from 1949 to 1953.** *U. S. NACA. Technical Note*, 3051, Nov. **1953. DLC**—V-G data obtained from

a four-engine civil transport airplane are analyzed to determine the magnitude and frequency of occurrence of gust loads and gusts. The influence of the gusts and operating speeds in rough air on the gust loads experienced is shown. Variations in roughness on different routes due to changes in seasonal weather conditions are indicated. The results of the analysis are in general agreement with those from similar operations of other civil transports recently investigated. *Subject Headings:* **1. Gust loads 2. Gusts 3. Airplane performance.**—*NACA abstract.*

6.1–210 551.551:629.13

Walker, Walter G., **Summary of revised gust-velocity data obtained from V-G records taken on civil transport airplanes.** *U. S. NACA. Technical Note,* 3041, Nov. **1953. DLC**—This paper summarizes gust-velocity data obtained by re-evaluating the normal accelerations and air speeds from V-G records taken on civil transport airplanes from 1933 to 1950. The re-evaluation was made on the basis of a "derived" gust velocity U_{de}, which is related to the "effective" gust velocity U_e by a conversion factor that is a function of the type of airplane and operating altitude. Although the value of the conversion factor varies from about 1.6 to 2.0 for the data presented, the conclusion drawn from the previously presented data based on U_e (in particular the relative levels of turbulence indicated between different routes) remain essentially unchanged. *Subject Headings:* **1. Gust loads 2. Gusts 3. Airplane performance.** —*NACA abstract.*

6.1–211 551.552:551.588.2(433)

Horney, G., **Der Wind an benachbarten Stationen (Berg- und Talstation).** [The wind at neighboring stations (mountain and valley stations).] *Meteorologische Rundschau,* 6(9/10): 189, Sept./Oct., **1953.** fig., 2 tables, 2 refs. **DLC**—Comparison of frequencies of direction and force at Würzburg-Stein (in E–W valley), Würzburg-Süd (in lee of hill) and airfield. *Subject Headings:* **1. Wind fields 2. Topographic effects 3. Würzburg, Bavaria.**—*C.E.P.B.*

6.1–212 551.552:551.511

§Newton, C. W. (*Chicago Univ. and Stockholm Univ.*), **Structure of wind field and variations of vorticity in a summer situation.** *Tellus,* Stockholm, 5(3):321–339, Aug. **1953.** 11 figs., 30 refs., 5 eqs. **MH-BH**—An analysis of the observed wind field at 300 mb is shown for a period when interactive shearline formations occurred. Each was preceded by the injection of a localized wind maximum into lower latitudes, southwesterly winds subsequently increasing east of the trough line, but not by advection of high winds around the southern end of the trough. Series of cross sections at different times illustrate the wind variations as the localized jets move through them. These indicate that the local wind maxima at 300 mb reflect similar variations through a deep layer and thus are not due to vertical undulations in the height of the jet stream. During a time of relatively steady state, changes of vorticity are examined in the region east of the rough, where the jet is weak in lower latitudes and increases in speed downstream. Locally large individual increases of absolute vorticity (of the order of the value of the Coriolis parameter in 12–24 hr) in the upper troposphere are accounted for by the conversion of vertical shear into vorticity about a vertical axis, through differential vertical motions in an indirect solenoidal sense. Considering the trough as a whole, there was weak subsidence in the upper troposphere, with maximum descending motions near the jet stream. *Subject Headings:* **1. Wind fields 2. Vorticity 3. Jet stream 4. Atmospheric circulation.**—*Author's abstract.*

WIND AND WIND VARIATIONS

See also: **Snow accumulation influence on rainfall** (Pramanik, Rao), 6.1–105.

6.1–213 551.553:551.515.2(759)

Johnson, Russell E. (*Hydrologic Service Div., U. S. W. B., Wash., D. C.*), **Estimation of friction of surface winds in the August 1949 Florida hurricane.** *Monthly Weather Review,* 82(3):73–79, March **1954.** 8 figs., 3 refs. **MH-BH**—The equations of motion are adapted for use in computing the tangential and normal components of friction in a model hurricane.

Values of the components of friction are estimated from surface data of the August 1949 Florida hurricane. The computations are based upon mean pressure and wind profiles describing the front and the rear portions of the storm, within 28 to 70 miles from the center, as it moved through the Lake Okeechobee region. The tangential component of friction appears to be greater than the normal component in the region to the rear of the center, while in advance of the center the opposite is generally observed. All friction curves show a continuous increase of friction with wind speed. *Subject Headings:* **1. Hurricane winds 2. Surface wind friction 3. Equations of motion 4. Florida.**—*Author's abstract.*

6.1–214 551.553.11:551.555.4

†Lawrence, E. N., **Nocturnal winds.** *Great Britain. Meteorological Office, Professional Notes*, 7(111), **1954.** 13 p. 8 figs., 24 refs., 2 eqs. At head of title M.O. 524k. **GB-MO**—A useful summary of the literature. Nocturnal wind is defined as a combination of katabatic wind K and land breeze L. L is charted over England (1–4 mph), K is given by $\sqrt{[2x/(1.4+100 \tan \theta)]}$ mph where x is distance from sea and θ is slope. Katabatic winds do not occur with slope less than 1 in 100 or 150. Effect of obstacles, soil or crops, local topography, length and concavity of slope and height are discussed. Katabatic winds occurred mainly in moderate but not large inversions. Other characteristics and crop damage are mentioned. *Subject Headings:* **1. Land and sea breezes 2. Katabatic winds 3. England.**—*C.E.P.B.*

6.1–215 551.553.12

Gutman, L. N., **O "vetre sklonov" nad podstilaiushcheĭ poverkhnost'iu malogo sklona.** ["Slope winds" over underlying surfaces of small slope.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geofizicheskaia*, No. 4:376–379, **1953.** 2 figs., 5 refs., 10 eqs. **DLC**—In comparing the results of theoretical studies (based on the assumption of an ideal horizontal surface) with actual observations, the possibility of slightly sloping surface must be taken into account for explanation of discrepancies. The author shows by mathematical means that a sufficiently strong local wind can arise upon a very slightly sloped surface, and this non-stationary "slope-wind" may compete in strength with other wind types. The mechanism of development of such wind is studied and interpreted. *Subject Heading:* **1. Slope winds.**—*N.T.Z.*

6.1–216 551.553.12

Stöckl, R. (*Graz*), **Der Talauf- und Talabwind von Graz.** [The up slope and down slope winds in the vicinity of Graz.] *Wetter und Leben*, 5(8/10):169–171, Nov. **1953.** fig. **MH-BH**—The phenomenon of mountains and valley winds is expressed by prevailing northerly winds during morning and evening and southerly winds at noon. Data are given on the average distribution of wind direction for the period 1901–1930 at 0700, 1400 and 2100 hours and the seasonal distribution of wind direction (average 1949–1951) at 0700, 1400 and 2100 hours. Owing to the fact that Graz is surrounded by mountains from SW to NW this wind system manifests itself (for period 1901–1950) at 0700 and 2100 hours only during March–Sept. while during Oct.–Feb. the winter monsoon predominates. At noon the up slope winds are displaced by SW winds during April and Aug. and by the winter monsoon from the east during Dec. *Subject Headings:* **1. Mountain and valley winds 2. Wind profiles 3. Long period records 4. Graz, Austria.**—*I.L.D.*

SPECIAL WINDS

See also: **Upper air winds** (Widger), 6.1–13; **Blizzard forecasting** (Storr), 6.1–101.

6.1–217 551.555.3

Georgii, Walter, **Studie über den Zondawind der Kordillere von Mendoza.** [Studies on the Zonda wind of the Mendoza Cordilleras.] *Meteorologische Rundschau*, 7(7/8):125–129, July/Aug. **1954.** 9 figs., 3 tables, 2 refs. **DWB**—The Zonda differs from the Alpine föhn in that both stable warm and unstable cold air can cross the Cordillera from either side. The dynamics are illustrated by upper air ascents and mountain data. Pacific polar air is at first held up by the Cordilleras to a depth of 5 km and cascades over it as the "White wind" with snowstorms, thunder and winds of 100 mph. The upper cold front descends to the plain of

Mendoza and finally the cold air breaks through in the valley of the Rio Negro. The part of the Zonda in the general circulation over S. America in 30–35°S is shown by vertical cross sections. Temperatures at two mountain stations show oscillations of multiples of 7 days, attributed to the passage of cyclone families. *Subject Headings:* **1. Zonda 2. Mendoza Cordilleras.**—*C.E.P.B.*

6.1–218 551.555.6

January 12, 1888 Blizzard Club, Lincoln, Nebraska. *In All Its Fury*, 1(1), Sept. **1950.** 12 p. photos. **DWB**—The purpose of this brochure, like that of the club publishing it, is to foster the memories of those who survived blizzards, floods and cyclones in the Midwest, and helped combat their fury. This first issue contains mostly accounts of the 1949 blizzard, written by officials responsible for different phases of rescue operations. Photographs of club members (including several survivors of the 1888 blizzard) and their stories are included. *Subject Headings:* **1. Blizzards 2. Midwest, United States.**—*G.T.*

6.1–219 551.555.9:91.04

Gelléri, Sándor, **Éghajlatkutatók expedíciója a Káspi-tó környéki síkságon.** [Climatological expedition to the plains near the Caspian Sea.] *Természet és Technika*, Budapest, 111(7):445–446, July **1952. DLC**—Description of activities and preliminary results of an expedition organized by the Russian Academy of Science. Purpose of the enterprise was to investigate physical properties and effects of "sukhovei," the parching wind of the Caspian plains. To this end air and soil temperature, humidity, wind and evaporation measurements were made in the desert east of Stalingrad. Anemometer and electric thermometers were placed on high poles. Among other instruments the author describes the "spider thermometer" (an electric device developed for measuring soil surface temperature), the "thermometer sonde" (a metal rod provided with an electric meter for measuring soil temperature to a depth of 1 m) and a novel type evaporimeter. *Subject Headings:* **1. Expeditions 2. Dry winds 3. Micrometeorological instruments 4. Sukhovei 5. Kazakhstan, U.S.S.R.**—*G.T.*

WIND EFFECTS

6.1–220 551.556:525.63

Bowden, K. F., **Conference on the North Sea floods.** *Weather*, 9(2):57–58, Feb. **1954.** photo. **MH-BH**—Report of conference at Institution of Civil Engineers, Dec. 16–17, 1953, on damage to coastal defences and measures to restore them. FARQUHARSON, W. I., **Storm surges on east coast of England.** PETERS, S. P., **Some meteorological aspects of North Sea floods with special reference to that of Feb. 1953.** *Subject Headings:* **1. Tidal floods 2. North Sea storm, 1953 3. North Sea.**—*C.E.P.B.*

6.1–221 551.515:525.63(42,492):551.556

Kovačević, M. (*Belgrade*), **Katastrofalna poplava Severnog Mora u Engelskoj i Holandiji, 1. februara 1953 godine.** [Disastrous storm surge on the English and Dutch coasts, Feb. 1, 1953.] *Yugoslavia. Hidrometeoroška Služba, Vesnik*, 2(2):45–52, April/June **1953.** 3 figs., refs. **DWB**—The mechanism of the storm surge of Feb. 1953 is explained as an effect of forces resulting from a) conjunction of sun, moon and earth; b) sudden atmospheric pressure drop and c) tangential wind pressure on the water surface. The synoptic development leading to the disaster is discussed. Statistical figures on the extent of areas affected and damage caused are presented. *Subject Headings:* **1. Storm tides, Feb. 1953 2. North Sea 3. England 4. Netherlands.**—*G.T.*

6.1–222 551.556:551.465:551.515

Proudman, J., **Note on the dynamical theory of storm surges.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 7:344–351, **1954.** 2 refs., 28 eqs. English, German and French summaries p. 344–345. **MH-BH**—The effects of wind and pressure on the water level in a closed rectangular basin and a rectangular gulf are set out in a series of equations and the development and decay of the surges are deduced. *Subject Heading:* **1. Storm surges.** —*C.E.P.B.*

6.1–223 551.556:551.461.2

Rossiter, J. R., **The North Sea storm surge of 31 January and 1 February 1953.** *Royal Society of London, Philosophical Transactions, Ser. A*, 246(915):371–400, Jan. 12, **1954.** 9 figs., 6 tables, 7 refs. **DWB**—Corrected hourly data of sea level disturbance on both sides of North Sea, Jan. 28–Feb. 3, 1953, are tabulated, graphed and discussed. Pressure charts at 6 hr intervals and lines of equal disturbance at 3 hr intervals are drawn for Jan. 31–Feb. 2. Under the influence of northerly gales the level of the whole North Sea rose by an average of 2.2 ft. At 0 hr Feb. 1 the disturbance was nearly 8 ft in Thames and 9–10 ft in Scheldt; at 6 hr anticlockwise rotation of disturbance lines brought a second peak of over 11 ft at Harlingen. The current through the Straits of Dover is analyzed and the prediction of surges at Southend discussed. *Subject Headings:* **1. Storm surges 2. North Sea storm, 1953 3. North Sea.**—*C.E.P.B.*

UPPER AIR WINDS AND VERTICAL MOTION

See also: **Convective currents** (Bunker), 6.1–194; **Upper air winds** (Holzapfel), 6.1–325.

6.1–224 551.557.2:551.511

Hess, Seymour L., **Variable vorticity trajectories.** Florida. State Univ. Dept. of Meteorology, Contract Nonr-988(01), Project NR 082-071, Technical Report [unnumbered], Nov. 15, **1953.** 13 p. 5 figs., 3 refs. **DWB**—Rossby (1940), in his constant absolute vorticity trajectory theory, assumed that horizontal divergence is zero. The author has calculated a number of trajectories for the Northern Hemisphere to show the effect of small divergences and to see how nearly they approach reality and shows that, except where the trajectories approach the Pole, the results are reasonable, and emphasize the effect of small amounts of divergence. In some cases the parcels wound up 90° in lat. away from each other. *Subject Headings:* **1. Air trajectories 2. Constant vorticity trajectories 3. Vorticity. I. Rossby, C.-G. II. Florida. State Univ. Dept. of Meteorology III. Contract Nonr-988(01).**—*M.R.*

6.1–225 551.557:551.510.535

Ratcliffe, J. A., **The analysis of fading records from spaced receivers.** *Journal of Atmospheric and Terrestrial Physics*, 5(3):173–181, July **1954.** 8 figs., 8 refs., 10 eqs. Also: Newstead, Gordon, **The determination of the velocity of winds from spaced fading experiments.** *Ibid.*, 182–185. fig., 3 refs., 7 eqs. **DWB**—Ratcliffe analyzes a record of travel of pulses, reflected at vertical incidence, along two arms of a right-angled triangle. The record shows considerable variability, the cause of which is discussed. It is shown that some but not all records of this type could be explained in terms of a constant wind and isotropically random amplitude pattern. Newstead further analyzes records of fading at 3 points and shows that under certain conditions it should be possible to deduce statistics of wind variation. *Subject Heading:* **1. Ionospheric winds.**—*C.E.P.B.*

6.1–226 551.558.21:532.59

Scorer, R. S., **Theory of airflow over mountains: III—Airstream characteristics.** *Royal Meteorological Society, Quarterly Journal*, 80(345):417–428, July **1954.** 2 figs., 2 tables, 16 refs., 30 eqs. **DWB**—The problem of an upper boundary is considered and the values of A and B in the expression

$$w = A \exp\{(k^2 - l^2)^{\frac{1}{2}} z\} + B \exp\{-(k^2 - l^2)^{\frac{1}{2}} z\}$$

(w = vertical velocity for waves of length $2\pi/k$) assumed by various solutions are discussed. Effects of friction, source and flow of energy, and behavior of lee waves are considered. No unique solution is found and it is possible that the perturbation solution is not practicable. Flow over an isolated hill is examined. Seven specific examples of lee waves are analyzed, showing that maximum amplitude of the waves is found close to levels of maximum l, especially at sharp inversions. (For Pt. I, *see R.M.S., Quart. Journ.*, 75:41, 1949; for abstract of Pt. II *see* 4.6–157, June 1953, *MAB.*) *Subject Headings:* **1. Lee waves 2. Orographic effects.**—*C.E.P.B.*

AQUEOUS VAPOR, HYDROMETEORS AND HYDROLOGY

HUMIDITY AND EVAPORATION

See also: **Psychrometer tables** (Maksic), 6.1–29; **Eddy diffusion** (Rider), 6.1–131; **Climatic effects** (Kerner), 6.1–174.

6.1–227 551.571

Demianczuk, P. P., **Nota odnośnie wspolczynnika dyfuzji pary wodnej w powietrzu i współczynnika lepcości dynamicznej powietrza.** [A note concerning the diffusivity of water vapor in the air and the dynamic viscosity of the air.] *Poland. Państwowy Instytut Hydrologiczno-Meteorologiczny, Wiadomości Służby Hydrologicznej i Meteorologicznej*, 3(2):152–155, **1951.** 7 tables, 27 eqs. **DWB**—A review on the determination of the coefficient n in the relationship $\frac{D}{D_0} = \left(\frac{T}{T_0}\right)^n \frac{p}{P}$; 0—diffusivity of water vapor in the air; T—absolute temperature, p—air pressure. Measured n varies between 1.7 and 2.0. Only BRUNT gives 2.2 to 2.6. Relationship between diffusivity and dynamic viscosity and their temperature dependence discussed on the basis of the kinetic theory of gases. *Subject Headings:* **1. Water vapor diffusion 2. Viscosity of air.**—*A.A.*

6.1–228 551.571:551.584.61

Priester, Gayle B., **Humidity for occupied spaces.** *Heating and Ventilating*, 49(6):83–86, June **1952.** fig. **DWB**—Terms related with humidity of the air are explained briefly. Absolute quantities of humidity under various conditions are indicated. The problem of optimum humidity in dwellings is discussed. Absolute figures on vapor produced in various household operations of a family of four are summed up from a table published as a reference data sheet in the Dec. 1949 issue of *Heating and Ventilating*. *Subject Headings:* **1. Humidity control 2. Indoor humidities.**—*G.T.*

6.1–229 551.571.1

Kosiba, Aleksander, **Zagadnienie bilansu wilgoci an slasku w swietle zmian wilgotnosci wzglednej.** [The problem of moisture balance in Silesia according to variations of relative humidity.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, 5(3/4):58–70, **1952.** 2 figs. English summary p. 68–69. **DWB**—The moisture resources in Silesia show great changes in recent years. Taking into account Wrocław evaporation data for 1946–1950 one finds a negative moisture balance in agreement with negative anomalies of relative humidity and precipitation. The study of the polar front and of the wind frequencies during the period points to an expansion of subtropical air masses towards the North and to an animated planetary circulation. This feature favors the activity of orographic föhns followed by a decrease of relative humidity, rainfall and by an increased evaporation. These phenomena affect not only the foothills of the Sudetes but are felt as far as the lowlands of western Poland where a moisture deficiency is also being observed. *Subject Headings:* **1. Moisture balance 2. Humidity variations 3. Precipitation variations 4. Silesia, Poland.**—*Author's abstract.*

6.1–230 551.573

Gentilli, J., **Estimating potential evapotranspiration in Australia.** *Western Australia. Univ. Geographical Laboratory, Research Report*, No. 40, **1952?** 20 p. tables, 32 refs., 11 eqs. Mimeo. **MH-BH**—The English original of a paper published previously in German in *Erdkunde*, 7:81–93, 1953 (*see item* 4.10–188, Oct. 1953, *MAB*). A critical survey of evapotranspiration formulas and their verification under Australian conditions is made. None of the formulas is entirely satisfactory. Thornthwaite's formula, based only on temperature and disregarding humidity, gives misleading results. Halstead's formula, based on maximum and minimum temperatures, gives a more correct picture. *Subject Headings:* **1. Potential evapotranspiration 2. Australia. I. Thornthwaite, C. W. II. Halstead, M. H.**—*A.A.*

6.1–231 551.573

Godard, Marcelin, **Action de la température sur la transpiration du mais: influence variétale.** [Effect of temperature and of variety on the transpiration of corn.] *Académie des Sciences, Paris, Comptes Rendus*, 238(24):2343–2345, June 14, **1954.** fig. **DWB**—Amount of evaporation from two varieties of corn was measured under experimental conditions with changing temperature and all other factors constant. A curve showing daily amount of transpiration per unit surface of foliage as a function of temperature is presented for each variety. *Subject Headings:* **1. Transpiration of corn 2. Evapotranspiration.**—*G.T.*

6.1–232 551.573

Haude, Waldemar, **Zur praktischen Bestimmung der aktuellen und potentiellen Evaporation und Evapotranspiration.** [Practical determination of actual and potential evaporation and evapotranspiration.] *Germany. Deutscher Wetterdienst, Mitteilungen*, No. 8, May **1954.** 22 p. 7 figs., 10 tables, 12 refs. **DWB**—Comparison of evaporation from an open pan and a Piché evaporimeter under similar conditions showed a close agreement in monthly totals of magnitude of evaporation. The annual variation of evaporation from a shielded pan and of the saturation deficit at 1400 hrs are analogous. Further comparisons were made between evaporation from moist soil, from actual plowland and from grass covered soil. Studies were carried out on the effect of air movement upon evaporation, on actual evapotranspiration and on the relationship between water need and irrigation. The significance of the 1400 hr deficit value as determined by evaporation rate for cultivated land and the measurement of actual evaporation from plowland with Popov apparatus are discussed. *Subject Headings:* **1. Evaporation measurements 2. Evaporation from pans 3. Piché evaporimeter 4. Evapotranspiration.**—*I.L.D.*

6.1–233 551.573:551.579(433)

Kern, Helmut, **Verteilungskarten von Landverdunstung und Abfluss.** [Charts of distribution of regional evaporation and runoff.] *Meteorologische Rundschau*, 7(7/8):137–140, July/Aug. **1954.** 2 figs., 11 refs. **DWB**—A chart of mean annual evaporation (1901–50) for Bavaria is constructed by the method of W. Wundt from station values of precipitation and air temperature. From this and the rainfall map a chart of runoff is drawn. *Subject Headings:* **1. Evaporation 2. Runoff 3. Bavaria.**—*C.E.P.B.*

6.1–234 551.573:551.584.43:631.6

Penman, H. L., **Water and plant growth.** *Agricultural Progress*, London, 27(2), **1952.** 8 p. 12 refs. **DA**—Transpiration is regarded as merely passage of water between soil and atmosphere. It is controlled by amount of solar energy retained at or near earth's surface and heat and vapor transport in the air, i.e., by the prevailing weather, when sufficient water is available in the root zone. This potential transpiration is the same for all short crops of the same color and covering the ground. Some applications to agriculture and irrigation practice are suggested. *Subject Heading:* **1. Evapotranspiration.**—*C.E.P.B.*

6.1–235 551.573:581.1

Puri, G. S. (*Forest Res. Inst., Dehra Dun, India*), **Forest ecology and evaporation measurements in India.** *Science and Culture*, Calcutta, 15(12):465–467, June **1950.** refs. **DLC**—The effect of the precipitation/evaporation ratio on the development of various types of forest is discussed. Evaporation measurements in India are generally limited to agricultural stations. The extension of such measurement to forest areas would benefit forestry, soil survey and soil conservation. *Subject Headings:* **1. Forest ecology 2. Evaporation networks 3. India.**—*G.T.*

6.1–236 551.773:631.4

Ramdas, L. A. (*Dir. of Agri. Met., Poona*), **Report on "Evaporation from bare soil in relation to the depth of the water table or the zone of saturation."** *International Association of Scientific Hydrology, Oslo*, **1948,** [*Transactions*], v. 3:16–19. fig., 2 tables, 19 refs. **DWB**—Evaporimeters with constant distance (*Z*) between top and water level were filled with different

kinds of soil. The evaporation is $E=E_0.10^{-\alpha z}$. E_0—evaporation of water table reaches the top, depends on weather and soil; α—soil constant varied between 0.008 and 0.015. Data given for 6 months. *Subject Headings:* **1. Evaporation from soil 2. Evaporimeters 3. Poona, India.**—*A.A.*

CONDENSATION

See also: **Cloud physics** (Weickmann, others), 6.1–12; **Temperature control of aircraft** (Still), 6.1–319; **Electrical conductivity of air** (Hess), 6.1–343.

6.1–237 551.574.1:615.47

Elektrisch aufgeladene Aerosole zur Behandlung der Silikose. [Electrically charged aerosol for treatment of silicosis.] *Umschau*, 54(8):239, April 15, **1954.** 4 figs., 3 refs. **DWB**—Curative effects are obtained by inhaling water droplets of 0.2–3μ, kept from agglomerating by a uniform electric charge. *Subject Headings:* **1. Aerosols 2. Silicosis.**—*C.E.P.B.*

6.1–238 551.574.1

Frisch, H. L., **The diffusion-controlled growth of an aerosol in a turbulent medium.** *Journal of Meteorology*, 11(4):270–275, Aug. **1954.** 9 refs., 41 eqs. **DWB**—Equations of transfer of diffusing material from supersaturated turbulent fluid through a stagnant film on an aerosol nucleus lead to an expression for growth rate involving $(\text{radius})^{3/2}$. With many competing aerosol particles the growth rate is less rapid and approaches asymptotically to a critical size. *Subject Heading:* **1. Aerosols.**—*C.E.P.B.*

6.1–239 551.574.1:551.576.1

Grabovskiĭ, R. I., **Ob obrazovanii oblakov i atmosfernykh osadkov.** [Cloud formation and atmospheric precipitation.] *Priroda*, Moscow, 43(6):91–95, June **1954.** 2 figs., 3 refs. **DLC**—After discussing the theoretical mechanism of the formation of cloud droplets and the development of clouds, the author describes possible experimental verification of the theoretical model involving the relationship between a presumed decrease of the concentration of atmospheric chlorides with the corresponding increase in the number of cloud droplets. The experimental procedure involved the collection of cloud droplets by causing them to freeze upon a moving surface attached to an airplane. This device is described and illustrated. Chemical analysis of the chloride content carried out by the author at the University of Leningrad and by S. M. Shmeter at the Central Aerological Observatory (Moscow) gave a chloride concentration of 6.3 mg/litre and 8.0 mg/litre, respectively. An examination of the relationship between the concentration of chlorides in droplets and their radius shows that cloud droplets grow by condensation up to a radius of 13–14μ, that with increase in radius from 14–15μ coagulation begins and that at a radius 20–25μ coagulation is the predominant factor in the growth of cloud droplets. *Subject Headings:* **1. Cloud droplets 2. Cloud formation 3. Drop growth 4. Chloride content of air 5. Coagulation.**—*I.L.D.*

6.1–240 551.574.1:551.578.41

Isono, K. (*Tokyo Univ.*), **An electron-microscope study of ice crystal formation. A preliminary report.** *Meteorological Society of Japan, Journal*, 2nd Ser., 31(9):318–322, Sept. **1953.** 5 figs., 10 refs. **MH-BH**—Report on a cloud-chamber experiment. In order to investigate the mechanism of ice crystal formation, crystals were produced by silver iodide and dry ice seeding. The crystals were then examined under a microscope in their initial stages of growth. Micro-photographs of the crystals are presented. They show, among others, the AgI nucleus at the center of the ice crystals produced by AgI seeding. *Subject Headings:* **1. Ice crystal formation 2. Artificial nucleation.**—*G.T.*

6.1–241 551.574.1:551.578.41:536.421

Kachurin, L. G., **Veroiatnost' obrazovaniia ledianykh zarodysheĭ v pereokhlazhdennoĭ vode.** [The probability of ice nuclei formation in supercooled water.] *Akademiia Nauk SSSR, Doklady*, Moscow, 93(2):307–310, Nov. 11, **1953.** 2 figs., 5 refs., 9 eqs. **DLC**—The

probability of volumetric crystal nuclei formation in supercooled water is computed according to the equation

$$W = \exp\left[C - \frac{u}{kT} - \frac{4\pi\delta}{3kT}\cdot\left(\frac{2\delta u}{NpLLm\frac{T_0}{T}}\right)\right].$$

In this paper the author studies a method of determining the constants of the equation on the basis of comparing them with a large number of tests measuring temperature of freezing drops. This method can also be used for other liquids possessing a speedy linear crystallization and a high heat conductivity. *Subject Headings:* **1. Ice nuclei formation 2. Supercooled water.**—*A.M.P.*

6.1–242 551.574.1:536.42

Mossop, S. C. and Bigg, E. K., **The freezing of cloud droplets.** *Royal Meteorological Society, Quarterly Journal*, 80(345):455–457, July **1954.** fig., 2 refs. **DWB**—Referring to papers by Bigg (*see items* 5.3–239 and –240, March 1954, *MAB*), Mossop quotes observations of freezing of distilled water in capillary tubes at −32.9°C, S.D.1.3. Bigg replies that presence of glass boundaries reduces freezing point. *Subject Heading:* **1. Supercooling of water.**—*C.E.P.B.*

6.1–243 551.574.1

*Rau, Walter, **Nachweis der allgemeinen Gültigkeit des Gefrierspektrums.** [Evidence of the general validity of the freezing nuclei spectrum.] *Geofisica Pura e Applicata*, 26:75–87, **1953.** 5 figs., table, 32 refs. In German; German and English summaries p. 75. **MH-BH**—The frequency spectra of freezing temperature of water drops of various kinds (distilled, spring, hot faucet, cold faucet, aquarium, melted snow, ground water, etc.) are shown graphically ranging from 0°C to −21°C, and are tabulated. Effect of glass container (tube), of various impurities and of electric fields are also shown. Theory, work of other authors in laboratory and in nature (artifically supercooled clouds or fogs and naturally supercooled clouds) also discussed and illustrated. Conclusion is that freezing nuclei produce a freezing temperature spectrum which is the same in the laboratory or in nature and does not depend on material on which drops freeze or on type of water, as there are always sufficient freezing nuclei. *Subject Headings:* **1. Freezing nuclei spectrum 2. Supercooled clouds.**—*M.R.*

6.1–244 551.574.41

†Krečmer, Vladimír, **Rosa jako činitel meteorologický, půdní, fyziologický, ekologický a rosa v lesnictví.** [Dew as a meteorological, physiological, ecological and soil factor, and dew in forestry.] *Lesnická Práce*, Prague, 30(4):340–375, **1951.** figs., 10 tables, photos, numerous refs. **DA**—This essay contains a good general treatment of the physical and physiological aspects of dew. Both atmospheric and subterranean dew are considered. The factors involved in the formation of dew, its daily and yearly distribution, the amount of water contributed by it, its effect on temperature near the ground and many other details are discussed and illustrated, with ample reference to authoritative world literature. The various ways in which dew influences the development of plants, and of forests in particular, are likewise explained. *Subject Heading:* **1. Dew.**—*G.T.*

6.1–245 551.574.42(438)

Wiszniewski, Waclaw, **Szdaź gołoledź oraz częstotliwósć ich występowania w Warszawie, okr. 1920–1950.** [Hoar frost and glazed frost, and the frequency of their appearance in Warsaw during 1920–1950.] *Gazeta Obserwatora PIHM*, Warsaw, 4(11):9–12, Nov. **1951. DWB**—After having pointed out that hoar frost and glazed frost have not been sufficiently studied in Poland, the author describes conditions favoring the formation of these types of winter precipitation as studied at the station of Mount "Kasprowy Werch." Here it was found that the hoar frost is deposited more thickly on aluminum cables than on iron rods. Study of glazed frost and the frequency of its occurrence in Poland is in an early stage; observations in Warsaw for the period 1920–1950 proved it to be uncommon. Author invites observers

at all stations of the country not only to record cases of hoar frost and glaze frost but to give detailed descriptions of the phenomena. *Subject Headings:* **1. Hoar frost frequency 2. Glaze frequency 3. Warsaw, Poland.**—*A.M.P.*

6.1–246 551.574.7

Lowell, Herman H. (*Lewis Flight Propulsion Lab., Cleveland*), **Maximum evaporation rates of water droplets approaching obstacles in the atmosphere under icing conditions.** *U. S. NACA, Technical Note*, No. 3024, October **1953.** 56 p. diagrs., 3 tables. **DWB**—Maximum possible evaporation rates of water droplets approaching obstacles in the atmosphere along stagnation lines or moving within intake ducts of airplanes under icing conditions were calculated for a wide variety of ambient conditions, flight Mach numbers, degrees of stagnation of the incident relative air stream, and droplet diameters. Droplet diameter, body size and flight Mach number effects were found to predominate, whereas wide variation in ambient conditions had little effect on evaporative losses. It was concluded that little or no evaporative loss occurs from droplets approaching small obstacles such as liquid-water-content measurement cylinders, whereas losses may be as high as several percent in the case of larger obstacles such as wings, or 50 percent in the case of ducts at high ram pressure. Losses in ducts in general, however, will usually be about 10 to 20 percent. *Subject Headings:* **1. Evaporation of water drops 2. Ice formation 3. Ice prevention 4. Icing of aircraft. I. U. S. NACA.**—*NACA abstract.*

6.1–247 551.574.7:629.13

Rogers, Don and Matthews, C. F. (*Avro, Canada*), **It's done with mirrors.** *Jet Age*, Toronto, 2(2):1–5, Summer **1953.** illus. **DWB**—"Ice seeking" flights conducted with Royal Canadian Air Force all-weather jet fighters CF-100 for the purpose of testing the aircraft's ice protection system are reported. Icing conditions and various types of ice forming on airplanes are described. *Subject Headings:* **1. Icing of aircraft 2. Icing prevention.**—*G.T.*

6.1–248 551.574.7:629.13

Ward, Rufus K. (*U. S. Air Force*), **Flight through ice. Compiled from reports of an air transport survey of civil and military organizations.** *Flying Safety*, Wash., D. C., 9(10):1–6, Oct. **1953.** illus. **DWB**—Causes of icing in clouds and rain conditions most favorable for icing, how to avoid or fly in icing areas and hints for landing with wing icing are included for the benefit of military flyers. *Subject Heading:* **1. Icing of aircraft.**—*M.R.*

FOG

See also: **Radiation fog forecasting** (Schneider), 6.1–102; **Advection fog forecasting** (Funke), 6.1–104; **Agricultural met.** (Horiguchi), 6.1–322.

6.1–249 551.575

§Dursi Moreau, Edgardo V., **Nieblas.** [Fog.] *Revista Nacional de Aeronáutica*, Buenos Aires, 14(142):46–49, Jan. **1954.** figs., diagrs. **DWB**—An illustrated discussion of the various types of fog and their importance or effect on aviation. Advective, maritime, radiation, frontal and other types found in peculiar localities in Argentina, are described and the synoptic situation giving rise to two of these types (advective and radiation) illustrated by sample synoptic charts. A dew point calculation chart (from temperature and relative humidity) is also included. Some simple rules for predicting radiation fog are also mentioned. *Subject Headings:* **1. Fog forecasting 2. Fog types 3. Argentina.**—*M.R.*

6.1–250 551.575:551.578.41

Jacobs, L., **Frost smoke.** *Marine Observer*, 24(164):113–114, April **1954.** 2 refs. **MH-BH**—Letter about extensive deep (up to 5000 ft) frost smoke ("ice crystal fog") in Dec.–Feb. in Gulf of St. Lawrence, with remarks on frequency and forecasting. *Subject Heading:* **1. Frost smoke.**—*C.E.P.B.*

6.1–251 551.575:634.94

Tatewaki, Misao; Nakano, Minoru and Yamamoto, Hajime, **Phytosociological study on forests in districts influenced by sea-fog.** *Tokyo. Forest Experiment Station, Bulletin,* No. 64:182–227, Oct. **1953.** 22 figs., 49 tables, 4 photos. In Japanese; English summary p. 227. **DWB**—A research of forest-ecology was undertaken in the vicinity of Akkeshi, Kushiro sub-Pref. The forests selected for the present study were composed of *Alnus maximowiczii, Betula ermani* and *Quercus crispula.* The research included also the mixed (*Abies sachalinensis-Betula ermani*) and the pure Saghalien fir- and the yew (*Taxus cuspidata* var. *latifolia*)-forests. The localities of the experimental area are as follows: 1) Birch forests in the experimental area of the climatology, Aikkappu, Akkeshi. 2) Broad leaved forests on the coastal terrace developed between Akkeshi and Kiritappu. 3) Oak forests on the hill-side along the sea-shore: Sakakimachi, Hamanaka. 4) Birch forests: Isl. Daikokujima. 5) Needle forest: Chanai, prefectural government forest. The belt-transect method was employed mainly to obtain data for phytosociological analysis and vertical construction of soils. The forms of trees in the district influenced by sea-fog closely resemble that in the alpine belts. The horizontal-lying upper stem, the creeping stem, the unbranched short main stem, branching in the lower portion of the stem and the shallow umbrella-shaped crown, represent the characteristic forms. According to the classification of soil survey of the national forests the soil concerned consists mainly of Bb∼Bd types. *Subject Headings:* **1. Fog prevention forests 2. Sea fog 3. Akkeshi, Japan.**—*Authors' abstract.*

6.1–252 551.575.1:551.510.42:001.4

Hamilton, R. A., **Smuisty.** *Weather,* 9(9):288, Sept. **1954. MH-BH**—Term used by R. L. Stevenson over 60 years ago, in S.E. Scotland, akin to smog. *Subject Headings:* **1. Smuisty 2. Smog 3. Terminology.**—*C.E.P.B.*

CLOUDS

See also: **Cloud formation and atmos. precip.** (Grabovskiĭ), 6.1–239.

6.1–253 551.576

Encyclopedia Britannica, **Cloud.** 4 plates. Sections of articles signed, respectively, G.Es. and W.E.K.M. **DWB**—A general, illustrated essay on clouds, cloud classification and cloud physics and, finally, technical details of methods of measuring cloud height by ceiling bottoms, pulsed ceilometers and the dew point method. *Subject Headings:* **1. Clouds. I. Middleton, W. E. K.**—*M.R.*

6.1–254 551.576

Jurwitz, Louis R. (*U. S. Weather Bureau*), **Clouds and the story they tell.** *Arizona Sewage and Water Works Association, Official Bulletin,* 13(1):165–179, April **1953.** diagrs. **DWB**—A general discussion of clouds, cloud types, cloud formation, cloud physics, frontal clouds and finally, cloud seeding. *Subject Headings:* **1. Clouds 2. Cloud seeding.**—*M.R.*

6.1–255 551.576.1:551.515.4:629.13

Carver, Weyman S., **Cornered.** *Flying,* Chicago, 55(1):30, 63, July **1954. DWB**—Vivid account of conditions enccuntered in flight through thunderclouds during a violent storm between Monroe, La., and Tallahassee, Fla. The author's experience is offered as an example of the formation of large thunderstorm areas from scattered thunderstorms. *Subject Headings:* **1. Thunderclouds 2. Thunderstorms 3. Flying weather.**—*G.T.*

6.1–256 551.576.1:629.135.2

*Godson, Warren L., **Formation of condensation trails by jet aircraft.** *Canada. Meteorological Div., Circular,* 2423, TEC-178, Jan. 25, **1954.** 10 p. fig., 2 tables, 2 refs. **DWB**—An equation for the density of the condensation trail produced by a jet aircraft is derived from basic principles, and the behavior of the solution to this equation discussed. The criteria for visible condensation trails are then deduced, and computations presented for critical temperatures as a function of pressure and relative humidity (re ice). The significance and utiliza-

tion of these critical conditions are discussed. *Subject Headings:* **1. Condensation trails 2. Jet aircraft.**—*Author's abstract.*

6.1–257 551.576.11:551.515.3

Dines, W. H., **Experiment illustrating the formation of the tornado cloud.** *Weather*, 9(8):249–250, Aug. **1954.** plate. **DWB**—Cloud is formed by steam from hot water, drawn up in a glass chamber by a fan. A strong updraft, rotary motion, decrease of pressure in the center, and hollow cloud cylinder all resemble tornado phenomena. Article reprinted from *Royal Meteorological Society, Quarterly Journal*, 22:71–73, **1896.** *Subject Heading:* **1. Tornado clouds.**—*C.E.P.B.*

6.1–258 551.576.11

Levin, L. M. and Starostina, R. F., **Nekotorye rezul'taty issledovaniia struktury oblakov.** [Some results of the investigations on the structure of clouds.] *Akademiia Nauk SSSR, Doklady*, Moscow, 93(2):253–256, Nov. 11, **1953.** 2 figs., 5 refs., 7 eqs. **DLC**—Some results of a complex investigation of the microstructure of clouds by means of collecting cloud drops with the aid of a cloud drop "trap" carried out during June–Nov. 1951 as part of the Elbrus high-mountain expedition of the Geophysical Institute of U.S.S.R. are presented and discussed. They concern: the number of drops with diameter exceeding 4μ which varied (depending on the types of the clouds) from less than 100 to 1000 in m^3; the size of the drops; their average cubic diameter, etc. *Subject Headings:* **1. Cloud structure 2. Cloud droplets 3. Drop size data.**—*A.M.P.*

6.1–259 551.576.31:551.524.35

Heckert, L., **Temperaturwellen als Hilfsmittel zur Registrierung des ganztägigen Bewölkungsvorganges.** [Temperature waves as an aid for recording diurnal cloudiness variations.] *Zeitschrift für Meteorologie*, 8(2/3):34–42, Feb./March **1954.** 9 figs., 4 refs. **DWB**—Temperature recordings made over one year in a forest revealed peculiar temperature oscillations which are clearly connected with variations in cloudiness, although the equipment was located in the shadow of a tree; similar waves during the night are explained by the effect of changing long wave radiation losses due to variations in cloudiness. *Subject Headings:* **1. Temperature waves 2. Cloud effects 3. Diurnal cloud variations 4. Forest climatology.**—*A.A.*

PRECIPITATION

See also: **Radar rainfall meas.** (Kiely), 6.1–34; **Precip. meas.** (Helmers), 6.1–47; **Snow accumulation influence on rainfall** (Pramanik, Rao), 6.1–105; **Synoptic studies** (Freeman, Marcus), 6.1–156; **Change of climate** (Lammert), 6.1–175; **Climat. drought characteristics** (Sting), 6.1–313.

6.1–260 551.577:06

Ackermann, W. C. (*Tenn. Valley Authority, Knoxville*), Albertson, M. L. and Berger, G. L., **Report of the Research Committee on Precipitation, 1951–1952.** *American Geophysical Union, Transactions*, 34(1):133, Feb. **1953.** **DWB**—Short general report on research activities on snow interception, forest influences, water balance, artificial nucleation, etc. Processing and publication of hourly precipitation data of the special hydroclimatic network, established in 1937, stopped in the past year (2300 recording and 600 nonrecording rain gages). *Subject Headings:* **1. Precipitation studies 2. Hydroclimatic networks. I. A.G.U. Research Committee on Precipitation.**—*A.A.*

6.1–261 551.577:551.506.1(83)

*Almeyda Arroyo, Elías, **Estaciones pluviométricas de Chile.** [Rainfall stations in Chile.] *Revista Geográfica de Chile*, Santiago de Chile, No. 11:89–94, May **1954.** entirely tables. **DWB**—Monthly means of precipitation amount are tabulated for 92 stations in Chile for periods varying from 4 to 85 years in length. The stations are listed (with co-ordinates and altitudes indicated) in six groups corresponding to different climatic zones. *Subject Headings:* **1. Precipitation data 2. Chile.**—*G.T.*

6.1–262 551.577:621.31

Atmospheric "wet blanket" hampers high-voltage project. *The Kentucky Engineer*, Lexington, Ky., 14(2):70, Feb. **1952.** **DLC**—A brief note reporting experiments carried on by Westinghouse Electric Corp. A 500,000 volt system consisting of three full-size test lines was used in conjunction with super-sensitive instruments with the purpose of determining the amount of corona-losses, radio-influence and the effect of weather factors on power supply. It was found that power leakage is increased 80-fold by rain, sleet and fog. *Subject Headings:* **1. Precipitation effects 2. Fog 3. Power systems. I. Westinghouse Electric Corp.**—*G.T.*

6.1–263 551.577(728.4)

*El Salvador. Servicio Meteorológico Nacional, **La lluvia de El Salvador.** [Rainfall data for Salvador.] First issue received 1(1), Jan./March **1954;** last issue received, 1(3), May **1954.** About 4 p. per issue. Mostly tables. **DWB**—Daily amounts of rainfall are tabulated for some fifty rainfall stations in Salvador, with comments on particular features in the month's rainfall development. *Subject Headings:* **1. Rainfall data 2. El Salvador.**—*G.T.*

6.1–264 551.577:551.579.4

*Quinones, Michael A. (*Puerto Rico Water Resources Authority*), **High intensity rainfall and major floods in Puerto Rico.** *American Society of Civil Engineers, Proceedings*, Vol. 79, Separate No. 364, Dec. **1953.** 35 p. 4 tables, 14 figs. **DWB, DLC**—Information on rainfall intensities of short duration is particularly essential in estimating flood flows in Puerto Rico. Although 24-hour rainfalls have been recorded at many locations since the latter part of the 19th century, and at present records are available from some 325 rainfall stations throughout the Island, only a few of these have self-recording instruments from which short duration records can be obtained. This paper presents a compilation of that rainfall information in Puerto Rico which is considered to be pertinent to the problem, and of studies made in an effort to derive, from the incomplete records available at present, a tentative pattern of rainfall which may be used as a basis for the rational determination of flood flows in Puerto Rico. Besides presenting records on normal rainfall as well as on rainfalls of high intensity in Puerto Rico, data on the distribution of rainfall throughout the Island during 3 storms are included. Estimates of flood flows in two streams in the Island during two of these storms, which appear to be of unusual magnitude even when compared to record breaking floods in the United States and other countries from watersheds of similar size, are presented. *Subject Headings:* **1. Rain intensities 2. Rainfall distribution 3. River flow 4. Puerto Rico.**—*From author's abstract.*

6.1–265 551.577:551.506(548)

*Ramakrishnan, K. P. (*Met. Off., Poona*), **A study of fifty years' rainfall of Madras City.** *Indian Journal of Meteorology and Geophysics*, 4(2):123–144, April **1953.** 13 figs., 15 tables, 3 refs. **MH-BH**—Rainfall records for Madras (13°04′N; 80°15′E) covering the period 1891–1940 are analyzed and presented in tables and graphs in various arrangements indicating daily and three-day normals; mean and extreme monthly totals; frequencies of daily raininess, of different intensities, of rainy spells and of dry intervals of various lengths; mean intensity per rainy day; association with depressions and storms; variability from year to year; the record total of Nov. 1918, etc. *Subject Headings:* **1. Rainfall data 2. Rainfall normals 3. Rainfall extremes 4. Rain intensities 5. Long period records 6. Madras, India.**—*G.T.*

6.1–266 551.577 551.582.2(794)

*San Jose, California. First National Bank, **79 year annual rainfall record, San José, California, 1874–1953.** From figures compiled by San José Municipal Weather Station. **1953.** 1 leaf (fold.) table. Figures carry through June 1953. **DWB**—Monthly, annual and July 1–June 31 rainfall totals and averages are given for San Jose in the Santa Clara Valley of Central California for every month from Jan. 1874 to June 1953. Average annual rainfall is 14.16″ greatest 30.30″, least 4.83″. Notes on temperature, frost, thunderstorms (<1 per year) snow (7 times in 33 years) and winds are included. *Subject Headings:* **1. Rainfall data 2. Long period records 3. Climate of San Jose, Calif. 4. San Jose, Calif.**—*M.R.*

6.1–267 551.577(44)

*Sanson-Carette, A., **Analyse statistique des séries d'observations pluviométriques.** [Statistical analysis of series of rainfall observations.] *La Météorologie*, Paris, 4th Ser., No. 29:16–37, Jan./March **1953.** 15 figs., 8 tables. French, English and Spanish summaries p. 16. **MH-BH**—An elaborate series of statistical analyses of rainfall data for 1881–1950 for Paris, Lyon and Nantes. Monthly and seasonal frequencies of various rainfall amounts and intensities are shown in graphs and tables. Stability of rainfall, dispersion or standard deviation of monthly amounts and coefficients thereof are investigated. This type of study is suggested for all the thousands of rainfall stations on the earth. *Subject Headings:* **1. Precipitation studies 2. Precipitation variations 3. Rainfall data 4. Long period records 5. Lyon, France 6. Paris, France 7. Nantes, France.**—*M.R.*

6.1–268 551.577:551.588.2

Smallshaw, James (*Tenn. Valley Authority, Knoxville*), **Some precipitation-altitude studies of the Tennessee Valley Authority. [Discussion by Walter T. Wilson.]** *American Geophysical Union, Transactions*, 34(4):583–588, Aug. **1953.** 5 figs. **MH-BH**—Five year precipitation averages for a cross section through the Great Smoky Mountains (1460 to 5000 ft) show a well marked increase with height, which somewhat slows down with altitude. Alter shields were used for all gages. A similar investigation across the sharp-crested Snake Mountains, N. C., with unshielded gages shows 30% lower precipitation on the top than a short distance below the crest. Similar features were found on Clinch Mountain in Virginia. *Subject Headings:* **1. Precipitation-altitude relationships 2. Topographic effects 3. Appalachian Mountains. I. Wilson, Walter T.**—*A.A.*

6.1–269 551.577(688)

*South Africa. Weather Bureau, **Gemiddelde reenval Suid-Wes-Afrika.** [Average rainfall South West Africa.] *South Africa. Weather Bureau, W.B.*, No. 18, March **1953.** 31 p. In Afrikaans and English. Price: 2/—. **DWB**—Monthly average rainfall and number of rainy days are tabulated for some 575 stations for periods varying between 2 and 56 years. The data are also arranged in graphical form and in charts. In the arrangement the emphasis is on the monthly variation of rainfall. Southwest Africa appears to be characterized by a desert or semi-arid climate with extremely variable and unreliable rainfall. *Subject Headings:* **1. Rainfall data 2. Annual rainfall variations 3. Southwest Africa.**—*G.T.*

6.1–270 551.577(689.1)

Southern Rhodesia. Meteorological Dept., **The rainfall season, 1950/51, 1951/52, 1952/53.** maps, tables. *Rhodesia Agricultural Journal*, Salisbury, 48(3):258–260, May/June **1951;** 49(4):212–214, July/Aug. **1952;** 50(6):484–485, Nov./Dec. **1953. DWB, DLC**—Each issue, covering a rainfall season (Oct.–April), gives an isohyetal map (8-in. intervals) for Southern Rhodesia and a table of rainfall amounts for the different areas within that region. There is also a month-by-month description of rainfall development. *Subject Headings:* **1. Rainfall data 2. Rainfall charts 3. Rainfall distribution 4. Southern Rhodesia.**—*G.T.*

6.1–271 551.577.2(673)

*Leal, Fernando Augusto and Queroz, Dario Xavier, **Distribuição da precipitaçãona Província de Angola. Esboço da carta udmétrica.** [Precipitation distribution in Angola Province. Rainfall charts.] Luanda, **1952.** 9 p. numerous maps (fold.) **DWB**—A collection of beautiful multi-colored folded isohyetal charts for each separate month, for the year as a whole, and for the type of rainfall regime (length of rainy season) and also a station location chart. A brief text gives the basic facts about the records, and rainfall of various sectors of Angola. The entire period of record was used for each of about 100 stations with 5 years or more of record. *Subject Headings:* **1. Isohyetal charts 2. Rainfall distribution 3. Angola. I. Angola. Serviço Meteorológico.**—*M.R.*

6.1–272 551.577.3(62)

Ali, F. M., **Outstanding variations in rainfall on the north coast of Egypt.** *Institut Fouad I du Désert, Heliopolis, Egypt, Bulletin*, 2(1):5–6, Jan. **1952.** chart, ref. **DLC**—It is shown

that the portion of the north coast of Egypt where the prevailing NW winter air flow is normal to the coast (around Alexandria) gets a maximum of cloud and precipitation (200 mm/yr), whereas the portion where the moist airflow is parallel to the coast (around Port Said) gets the minimum (75 mm/yr). Isohyetal chart shows even less rainfall occurs in the interior around Benha and Giza (<25 mm/yr). *Subject Headings:* **1. Rainfall variations 2. Coastal configuration effects 3. Egypt.**—*M.R.*

6.1–273 551.577.3(56)

Erinç, Sirri (*Prof. Inst. of Geog., Istanbul Univ.*), **Türkiyede nisbi azami yağiş sahasinin yillik salinimi.** [Annual oscillation of the relative maximum precipitation area in Turkey.] *Istanbul. Université. Coğrafya Enstitüt, Dergisi*, 1(1):63–66, 1951. 3 figs. English summary p. 65–66. **DLC**—The author presents (1) an illustration of the annual oscillation of the maximum precipitation area in Turkey by monthly maps showing rainfall in percent of the annual rainfall amount, (2) rainfall profiles (Kars-Antalya and Kars-Urfa) for autumn and spring showing displacement of the maximum precipitation area and (3) a map of distribution of rainfall regimes in Turkey. The graphical material is commented on briefly. *Subject Headings:* **1. Precipitation regime 2. Precipitation data 3. Turkey.**—*G.T.*

6.1–274 551.577.3(54)

*Pramanik, S. K. and Jagannathan, P. (*Met. Off., Poona*), **Climatic changes in India (I)—Rainfall.** *Indian Journal of Meteorology and Geophysics*, 4(4):291–309, Oct. **1953.** 7 figs., 11 tables, 13 refs. **MH-BH**—Rainfall trends are studied for 30 stations with long homogeneous records. Statistics tabulated or plotted are: mean annual total, S.D., coefficient of variability, skewness, kurtosis and extremes. Annual totals and some 10-year moving averages are plotted. There is little evidence of cyclic variations. Coefficients of orthogonal polynomials up to 5th degree are tabulated and their contributions to variance of annual rainfall examined. At some stations these, especially first and fifth, account for a significant part of the variance. Linear trend decreased over N. Madras coast, Hyderabad and Deccan and N.W. India, increased over W. coast and Assam. Some further features are shown by moving averages. Seasonal trends are examined. *Subject Headings:* **1. Rainfall variations 2. India.**—*C.E.P.B.*

6.1–275 551.577.32(689.1)

Chaplin, J. H., On the wet season in Northern Rhodesia. *Weather*, 9(9):272–275, Sept. **1954.** 3 figs., 2 tables. **MH-BH**—Over 90% of rain falls in wet season (Oct.–Nov. to April–March). Mean, earliest and latest opening and closing dates are tabulated and mean opening and closing dates and duration plotted. Rains advance S.E. and retreat N.W., lingering in Zambezi valley because of floods. *Subject Headings:* **1. Rainy seasons 2. North Rhodesia.**—*C.E.P.B.*

6.1–276 551.577.35:519.24

Lawrence, E. N., **Application of mathematical series to the frequency of weather spells.** *Meteorological Magazine*, London, 83(985):195–200, July **1954.** table, 14 refs., 5 eqs. **MH-BH**—Frequency N of rainless spells of 3 days or more at stations in Britain was represented by the geometric series $N(1+P+P^2+ \ldots +P^{m-3}+ \ldots)$, where P is the probability that a spell lasting m days will continue next day, and by the logarithmic series $F_m = ar^{m-1} \times \left(\frac{1}{m} + \frac{r}{m+1} + \frac{r^2}{m+2} + \ldots\right)$, where $r = 1 -$ (frequency of isolated dry days per month)/(average number of dry days during month). Both forms are acceptable to a first degree of approximation but the logarithmic series was the closer in most cases. Uttinger's form of the Poisson series is also considered. *Subject Headings:* **1. Precipitation frequencies 2. Drought frequency 3. Statistical analysis.**—*C.E.P.B.*

6.1–277 551.577.37(43)

*Aniol, Rudolf, **Über starke Niederschläge im Gebiet Taunus-Odenwald.** [Heavy precipitation in the Taunus-Odenwald region.] *Germany. Deutscher Wetterdienst, Berichte*, No. 11, **1954.** 16 p. 19 figs., table, 10 refs. **DWB**—This mountainous area has a rather dense network of stations with long series of records of precipitation. The data for 25 stations

in the region between the Neckar and Lahn just left of the Rhine, are analyzed for monthly precipitation frequency in different 5 mm intervals from 1–50, and 25 mm (50–75) and >75 mm, using records for 1903–18 and 1922–44, and the frequency by month of various groupings of these values. Relation between number of days precipitation and amount and between frequency of heavy rains and air masses is considered. Daily amounts, especially excessive amounts, are also analyzed in connection with air flow and fronts. Several types of rainfall orientation or distribution in the mountains are differentiated and the importance of the air flow shown to be greater than that of the air mass present. *Subject Headings:* **1. Excessive precipitation 2. Orographic effects 3. Storm rainfall 4. Taunus Range, Germany.**—*M.R.*

6.1–278 551.577.37(676)

Sansom, H. W., **The maximum possible rainfall in East Africa.** *East Africa High Commission. Meteorological Department, Technical Memorandum*, No. 3, **1953.** 17 p. fig., 2 tables, 5 refs., 8 eqs. Mimeo. **DWB**—An expression is given for effective precipitable water W_e of an air mass saturated along 80° moist adiabat. Mechanism of a thunderstorm with entrainment leads to a maximum rainfall of $4W_e$/hr for 40 min or $6W_e$ for a 3 hour storm. Over about 5 min maximum rate may be 12 in/hr. In a tropical cyclone sustained rate is calculated as 1.5 in/hr for 10 hrs or more. Over a river basin of 300 sq mi maximum average is calculated as 0.75 in/hr. *Subject Headings:* **1. Maximum precipitation 2. East Africa.**—*C.E.P.B.*

6.1–279 551.577.38:551.573

*Van Bavel, C. H. M. (*Assoc. Prof. Soils, North Carolina Agri. Exp. Station*), **A drought criterion and its application in evaluating drought incidence and hazard.** *Agronomy Journal*, Geneva, N. Y., 45(4):167–172, April **1953.** 4 tables, 5 figs., 10 refs. **DA, DLC**—THORNTHWAITE's procedure for the estimation of soil moisture was adopted for the computation of the frequency of "drought days," which is defined in terms of the exhaustion of available soil moisture. Evapotranspiration was estimated on the basis of average monthly temperature for Raleigh, N. C., and the number of drought days for each year was computed by an electronic calculator, assuming 1.70″ water reserves in soil 8″ thick as characteristic for tobacco. Probability curves of drought days are given also for other water reserves from 1 to 4″. The method was found superior to a number of other approaches, analyzed in some detail. *Subject Headings:* **1. Drought days 2. Drought frequency 3. Evapotranspiration 4. Thornthwaite's method 5. Raleigh, N. C.**—*A.A.*

RAIN

See also: **Snow crystals** (Nakaya), 6.1–4; **Luminous reflectance of snow** (Christie), 6.1–168; **Radiation with application to snow** (Dunkle, Gier), 6.1–169; **Ice crystal formation** (Isono), 6.1–240; **Ice nuclei formation** (Kachurin), 6.1–241; **Frost smoke** (Jacobs), 6.1–250.

6.1–280 551.578.11

Illsley, P. F., **Unexpected heavy rain.** *Meteorological Magazine*, London, 81(957):90–91, March **1952.** fig. **DWB**—Heavy rain at Plymouth, Eng., Oct. 3, 1951, in high pressure ridge. Tephigram given; top of cloud barely reached freezing level. *Subject Headings:* **1. Rain from nonfreezing clouds 2. Plymouth, England.**—*C.E.P.B.*

6.1–281 551.578.11

McDonald, James E., **The shape of raindrops.** *Scientific American*, 190(2):64–68, Feb. **1954.** illus. **DLC**—Presents high speed photographs which show that falling raindrops are not tear-shaped as is commonly believed, but are shaped (on the bottom) like a flat hamburger bun. If the internal pressure field exactly equals the external field on all sides, the drop will be spherical as is the case with fog and cloud droplets, but in falling, the external pressure is greater on the front than it is on the circumference or "waist." Thus the radius of curvature on the bottom can be shortened considerably if the drop is large enough and its fall fast enough. Some pressure also exists on the top to shorten its radius. Surface tension tends to keep the

drop spherical until it achieves a size where hydrodynamic forces exceed surface tension. Aerodynamic (turbulence) reduction in pressure accounts for top not being flatter than the bottom. *Subject Headings:* **1. Raindrop shapes 2. Cloud physics.**—*M.R.*

6.1–282 551.578.11

Mason, B. J. and Ramanadham, R., **Modification of the size distribution of falling raindrops by coalescence.** *Royal Meteorological Society, Quarterly Journal,* 80(345):388–394, July **1954.** 2 figs., table, 8 refs., 3 eqs. **DWB**—Observations with photoelectric spectrometer are on the average represented by MARSHALL and PALMER's exponential expression (1948) but a sample over several minutes may show marked deviations. Modifications of drop size spectrum by coalescence are calculated, starting with an exponential distribution 1 km above cloud base. These are shown in an extensive table. Accretion of cloud droplets by raindrops, and evaporation between cloud base and ground, shift spectrum towards larger sizes without greatly affecting shape of curve, increasing radar echo intensity at lower levels. *Subject Heading:* **1. Raindrop size distribution.**—*C.E.P.B.*

HYDROMETEOROLOGY

See also: **Weather periodicities** (Szesztay), 6.1–106; **Regional evaporation distribution** (Kern), 6.1–233; **High intensity rainfall** (Quinones), 6.1–264.

6.1–283 551.579(058)

Dhir, R. D. and Krishnamurthy, K., **Hydrological data of India.** *Irrigation and Power,* Delhi, 10(2/3):288–303, April/July **1953.** fig., tables. **DWB**—Discusses hydrology in the five year plan of India, kinds of hydrological data (rainfall, temperature, river gage and discharge data), contents of water year book (numerous maps with meteorological stations, normal isohyets and isotherms, etc.), methods of presentation, sample forms for rain, snow, dry and wet bulb temperature, etc. *Subject Headings:* **1. Hydrologic yearbooks 2. Hydrometeorological data 3. India.**—*M.R.*

6.1–284 551.579

Ertl, Otto, **Das Abflussvermögen der Gewässer im Raum der Nordalpen.** [Runoff capacity of watersheds in the north Alpine region.] (In: Bavaria. Landesstelle für Gewässerkunde, **Beiträge zur Gewässerkunde.** Munich, **1950.** p. 52–70. 4 figs., 5 tables, 5 eqs.) **DLC**—Annual precipitation (N), runoff (A) and evapotranspiration is given for catchment areas in the Alps, as well as their mean height (h) and annual temperature (t). It was found that the coefficient in Kellers relation $A+1298=\lambda(N+948)$ [mm] depends primarily on t°C; $\lambda=1{,}043\frac{1}{42}(t+7)^2$; also λ partly depends on the geological structure and plant cover. The runoff was carefully computed, considering also ground water outflow and the derivation by hydroelectric stations. The relation of temperature to height is shown. *Subject Headings:* **1. Hydrologic cycle 2. Runoff 3. Alps.**—*A.A.*

6.1–285 551.579:06

Fomina, Z., **Gidrometeorologicheskoe obsluzhivanie neftianoĭ promyshlennosti Aizerbaĭdzhanskoĭ SSR i Dagestanskoĭ ASSR.** [The hydrometeorological service of the oil industry in Azerbaidzhan and Dagestan.] *Meteorologiia i Gidrologiia,* No. 6:17–19, **1952. DLC**—Six special hydrological stations have made observations on islands in the Caspian Sea near the Apsheron Peninsula in order to provide the necessary information for the oil industry. The most important forms of service were the short range weather forecasts, information about sea ice conditions, sea swell and long range forecasting for autumn and winter seasons. *Subject Headings:* **1. Hydrometeorological services 2. Oil industry 3. Caucasus.**—*N.T.Z.*

6.1–286 551.579:628.1(433)

*Kern, Helmut, **Niederschlags-, Verdunstungs- und Abflusskarten von Bayern. Jahresmittel 1901/1951.** [Precipitation, evaporation and runoff charts for Bavaria. Annual

means 1901/1951.] Munich, 1954. 12 p. 2 figs., 4 maps (fold.), 12 refs. At head of t-p: Veröffentlichung . . . der Bayer. Landesstelle für Gewässerkunde in München. **DWB**—The four maps of Bavaria presented give: (1) isohyetal lines and (2, 3 and 4) isolines of evaporation (determined from precipitation and temperature), runoff (in mm, calculated from precipitation and temperature) and discharge (the runoff chart converted into 1/sec km²). The maps are based on data for the period 1901–1951. Methods used in computing the data and drawing the charts are explained. *Subject Headings:* **1. Precipitation charts 2. Evaporation charts 3. Runoff 4. Hydrologic data 5. Bavaria.**—*G.T.*

6.1–287 551.579

Tixeront, J.; Caine, A.; Berkaloff, E. and Mauduech, E., **Bilan d'eau des massifs calcaires en Tunisie. Cas des captages de Tunis et de Bizerte.** [Water balance of the limestone mountains in Tunis. Example for the water supply of Tunisia and Bizerte.] International Union of Geodesy and Geophysics. *Association of Scientific Hydrology, Brussels*, **1951,** [*Transactions*], 4:47–53. tables. **DWB**—Study based on 5 years of observations at the Djebel's Chennata (P = 633, R = 264), Bent Saidane (P = 472, R = 108) and Zaghouan (P = 463, R = 166) with P in mm—annual precipitation at the nearest meteorological station, unfortunately disregarding the increase of precipitation with height, and R in mm—deep percolation measured by discharge of sources and water consumption. The authors propose a method to compute currently retention and evaporation, based on measurements of the evaporability by Piché evaporimeters and the maximum water retention height of the soil, which was found between 60 and 120 mm. *Subject Headings:* **1. Hydrologic cycle 2. Arid zones 3. Tunis.**—*A.A.*

6.1–288 551.579

†*van Eimern, Josef, **Die Schwankungen des natürlichen Wasserhaushaltes am linken Niederrhein unter besonderer Berücksichtigung der Grundwasserschwankungen.** [Variations of the natural water balance on the left side of the lower Rhine with special regard to ground water variations.] *Bonn. Universität. Geographisches Institut, Arbeiten, Ser. A*, No. 12, [1951?] 96 p. 28 diagrs. (in pocket), 16 tables, 105 refs. Summary of Thesis, Bonn Univ., Faculty of Mathematics and Natural Sciences, 1948. **DWB**—Standard climatological averages presented for 2–5 stations, as well as seasonal and annual means and monthly averages for precipitation, runoff and evapotranspiration for 5–8 catchment areas, comparing results with ground water conditions. The annual evapotranspiration is fairly constant (501–525 m), the precipitation varies between 685 and 732 mm in the areas under study (average annual temperature 9.0°C). Relationship between seasonal runoff and precipitation in the same and the previous seasons are derived. *Subject Headings:* **1. Hydrologic cycle 2. Rhine River, Germany.**—*A.A.*

6.1–289 551.579.2

Garstka, Walter U.; Bertle, F. A. (both *Bur. of Reclamation, Denver*), and Duford, Earl G. (*Forest Service, Fort Collins, Colo.*), **Short-term forecasting of snowmelt runoff.** *Western Snow Conference, 20th, Sacramento, California, April* **1952,** *Proceedings*, p. 20–28. 5 figs., table, 5 refs. **DWB**—The daily snow melt was computed from temperature, humidity and wind (equations are not given), as well as the one-day's snow melt contribution to runoff, considering the necessary time lag. Combining these one-day hydrographs with the recession flows, current forecasts of snow melt runoff are made, which are shown graphically and described in some detail. *Subject Headings:* **1. Snow melt runoff 2. Runoff forecasting 3. St. Louis Creek, Colorado.**—*A.A.*

6.1–290 551.579.4:551.515.2(4)

Brandt, D. M., **Katastroficheskoe navodnenie v zapadnoĭ Evrope.** [Catastrophic floods in Western Europe.] *Priroda*, Moscow, No. 8:122–128, Aug. **1953.** 4 figs. **DLC**—Popular description of the catastrophic storm, which started over the North Sea on the night of Feb. 1, 1953 and developed during the day into a real hurricane, with wind velocities up to 30 m/sec. This storm continued several days, raising the water of the North Sea and flooding the coastal

regions of Holland, Belgium and the southeastern part of England with huge losses in property and human lives. Meteorological conditions associated with this storm are reviewed and it is pointed out that the high tide coincided with the strong winds from the sea. Coastal dikes, which had needed repair for a long time, collapsed and gave way to sea water. Explanation of general meteorological concepts—cyclones, anticyclones, fronts, air masses, atmospheric circulation, etc. presented in a concise, but easily comprehensible, text. Figures reproduce charts of isobars and wind vectors in Jan. 1953; and maps of the 1) southern part of the North Sea with coastal regions; 2) dikes and lower land regions and 3) the path of the catastrophic cyclone. *Subject Headings:* **1. Flood damage 2. Storm tides (Feb. 1953) 3. North Sea storm (Feb. 1953) 4. Hurricanes 5. Europe.**—*N.T.Z.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATOLOGY

6.1–291 551.58:519.241.8

Levert, C., **Herhalings- en afwezigheidstijden van zeer grote waarden van klimatologische elementen.** [Recurrence and absence of very large values of climatic elements.] (In: Netherlands. (K.) Meteorologisch Instituut, **1854 Koninklijk Nederlands Meteorologisch Instituut, 1954.** 'S-Gravenhage, **1954.** p. 353–364. fig., table, ref., eqs.) **DWB**—This article deals with a proposition by GUMBEL: "The probability that a year with a 'reduced largest value' equalling or exceeding y will occur for the first time after 0.32 $\bar{T}$ and before 3.13 $\bar{T}$ years, is about 2/3. 'The factors 0.32 and 3.13 do not depend on the value of y, provided that y is large enough (and in consequence the event is 'very rare'). Here $\bar{T}$ stands for $1:(1-\phi)$, with $\phi = \exp[-(e^{-y})]$, is called 'the mean return period.'" The author proves this proposition in quite a different way, not using the 'Theory of Extreme Values' and stresses the fact that the results will hold also for the large values if sufficiently large values are considered. Next the author studies the frequency distribution of return periods and absence periods. Finally he considers risks, which are introduced in order to interpret the computed probabilities as exactly as possible. *Subject Headings:* **1. Frequency distribution 2. Statistics in climatology 3. Periodicities.**—*Author's abstract.*

6.1–292 551.58:63

Goldie, N., **Symposium on meteorology and Scottish agriculture.** *Weather*, 9(9):283–284, Sept. **1954.** Also: **Meteorology and Scottish agriculture.** *Nature*, London, 174(4428): 493–494, Sept. 11, 1954. **DWB**—Account of symposium at Royal Meteorological Society, Edinburgh, July 17, 1954. J. GRAINGER and others described effects of limiting weather conditions on hosts (e.g., early potatoes) as well as parasites. F. L. WATERHOUSE considered microclimate of grassland in relation to insects; J. H. R. COUTTS, temperature profiles in soil; J. M. CABORN, microclimate of shelterbelts; F. D. H. GREEN, climate and ecology of mountain-top valleys and A. M. SMITH and K. SIMPSON, effect of summer rainfall on response to phosphate fertilizers. *Subject Heading:* **1. Agricultural climatology.**—*C.E.P.B.*

6.1–293 551.58

Sovremennye zadachi klimatologii. [Current climatological problems.] *Vsesoiuznoe Geograficheskoe Obshchestvo, Izvestiia*, 84(4):426, July/Aug. **1952. DLC**—An abstract of a paper delivered by O. A. DROZDOV and S. A. SAPOZHNIKOVA on March 19, 1952, before a meeting of the Meteorological Commission of the Geographical Society of the U.S.S.R. They stressed the economic importance of climatology and the "need for differentiating the concepts," "local climate" and "microclimate," and the study of climate as a branch of physical geography. *Subject Headings:* **1. Applied climatology 2. U.S.S.R.**—*I.L.D.*

6.1–294 551.581:581.1

Wissmann, Hermann v. **Pflanzenklimatische Grenzen der warmen Tropen.** [Plant climate boundaries in the warm tropics.] *Erdkunde*, Bonn, 2(1/3):81–92, **1948.** fold. map

in pocket, 73 refs. **DLC**—A map shows the location of the horse latitudes in the winter and of the thermal (and wind) equator in the summer of each hemisphere. Another map gives the absolute frost limit, regions with frost under stagnant conditions (border tropics) and the annual isotherm of 18.3°C as the limit of thermal deficiency for coffee plantations. The limits of the "warm tropics" are defined by the distribution of megathermic plants with a high heat requirement and absolute frost sensitivity. *Subject Headings:* **1. Climatic classifications 2. Plant ecology 3. Tropics.**—*A.A.*

CLIMATE OF PARTICULAR PLACES

See also: **Local climatic studies** (Koch), 6.1–8; **Climatic summary of U. S.** (U. S. W. B.), 6.1–11; **Local climatology** (La Grange), 6.1–36; **High alt. aviation** (Mitchell), 6.1–37; **Rainfall data** (San José, Calif. First Natl. Bank), 6.1–266.

6.1–295 551.582:338(791)

Balchin, W. G. V. and Pye, Norman, **Recent economic trends in Arizona.** *Geographical Journal*, London, 120(2):156–173, June **1954.** 4 figs., 4 photos, map, refs. **DLC**—Includes a brief account of the climate of Arizona, water supply and irrigation. The rate of pumping far exceeds rate of recharge, causing a downward trend of water level and increased concentration of salts. *Subject Headings:* **1. Climate of Arizona 2. Arizona.**—*C.E.P.B.*

6.1–296 551.582(664,667,669):016

†British West Africa. Meteorological Services, **Bibliography of publications relating to the meteorology of British West Africa.** Lagos, [1954] 14 p. Mimeo. **GB-MO**—Complete lists in alphabetical order, with titles but no abstract, of the published and MS material available in the Headquarters library at Lagos. *Subject Headings:* **1. Bibliographies 2. West Africa.**—*C.E.P.B.*

6.1–297 551.582(494):634.9

*†Primault, B., **Contribution à l'étude de l'influence des éléments météorologiques sur l'accroissement des forêts.** [Contribution to the study of the influence of meteorological elements on the growth of forests.] *Geofisica Pura e Applicata*, 24:149–206, Jan./April **1953.** 11 figs., 20 tables, bibliog. p. 203–206. English and Italian summaries p. 149–150. **DLC**—An elaborate study of the effect of weather conditions on the growth of trees (spruce) in a number of different climatic or topographic situations in various parts of Switzerland. Data for 1925–1950 are tabulated for each section (where available) and graphs showing the relationships between the elements and the annual tree ring width included for each site. The conclusion is that rainfall is a decisive factor only in semi-arid regions and that temperature (spring) is the most important in the *forelands*. The effect of temperature increases with altitude and with latitude whereas the effect of precipitation decreases with increasing latitude and altitude. Accumulated temperature and precipitation for spring, autumn and the vegetation year were also correlated with tree growth, but not found significant. A thorough review of previous work on this subject is included. *Subject Headings:* **1. Climate and tree growth 2. Tree ring studies 3. Switzerland.**—*M.R.*

6.1–298 551.582(714):634.94

*Villeneuve, G. Oscar, **Climatic conditions of the Province of Quebec and their relationship to the forests.** *Quebec (Province). Bureau de Météorologie, Bulletin*, No. 6, **1946.** 123+p. 12 tables, 20 charts, bibliog. p. 76–80. **DWB**—Meteorological observations obtained during a decade at more than 200 weather stations have been used as a basis for the investigation of climatic conditions in the Province of Quebec. Standard climatic elements were derived from the original data and are presented in both tabular and graphic form. The Province of Quebec may be divided into two distinct broad regions: a treeless tundra and a forest formation. These regions and their minor subdivisions are delimited on the basis of forest composition. The climatic factors having greatest ecological importance are considered from the standpoint

of their significance in accounting for differences in forest conditions in the four regions and twenty-two sections of the Province. *Subject Headings:* **1. Climate of Quebec 2. Climatic data 3. Forest limits 4. Quebec (Province), Canada.**—*From author's abstract.*

6.1–299 551.582.2:016 551.506.7:016

U. S. Weather Bureau, **Inventory of unpublished climatological tabulations.** Sections 1–10, April 1, **1954.** forms. **DLC, DWB**—Each of the 10 sections contains a list of stations for which copies of tabulations of unpublished data are available (on order from U. S. Weather Bureau, Wash., D. C.), description of type of data, and sample tables showing the arrangement of the data. The inventory covers: (1) Navy summaries of monthly aerological records, for more than 900 naval stations throughout the world, with 12 summaries for each station (SOMAR); (1A) revised Navy summaries (SMAR); (2) Air Force summaries of surface weather observations (A-B summaries); (3) Weather Bureau wind summaries by combined velocity groups; (4) general weather conditions, ceiling and visibility, monthly and annual (1141A and 1141C); (5) ceiling-visibility-wind tables by combined velocity groups; (6) surface wind summaries for specified ceiling and visibility conditions; (7) psychrometric values; (8) winds aloft (WBAN-22); (9) constant pressure data (WBAN-33) and (10) upper air wind summaries (1117). *Subject Headings:* **1. Climatic data inventories 2. Upper air data 3. Observational data inventories.**—*G.T.*

6.1–300 551.582.3(26)

Hamburg, Seewetteramt, **Klimatologie der Nordwesteuropäischen Gewässer.** [Climatology of northwest European waters.] Its *Einzelveröffentlichungen*, No. 4, **1954.** 59 p. mostly charts and diagrs. Contents: Pt. 1, Bullig, H. J. and Bintig, P., **Temperatur des Oberflächenwassers und Temperatur-Differenz Luft-Wasser,** [Temperature of surface water and temperature difference air-water], p. 3–25. 51 charts. Pt. 2, Markgraf, H. and Bintig, P., **Windverhältnisse,** [Wind conditions], p. 27–59. charts 52–111, 4 diagrs. **DWB**—The "Climatology of the northwest European waters" complements the "Climatology of the eastern middle Atlantic" published by the Meteorologisches Amt für Nordwestdeutschland in 1947. The area covered is 40°N to 70°N and 10°W to 30°E. All observations have been transferred to punched cards and computed. They cover the periods 1906–1914 and 1920–1939. Charts in Pt. I include: monthly mean water temperature isotherms; monthly temperature variations and distributions; annual variations of temperature distribution; quarterly and annual air-water temperature differences and quarterly water temperature variations (mean 1922–39 minus mean 1906–13). All observations are °C. Pt. II contains the following: charts of mean wind force for every month with number of observations for every 2° interval; nomograms and curves (unsmoothed) of annual wind force frequencies; monthly wind roses; prevailing wind directions for the months Jan., April, July and Oct. in specified locations; prevailing annual wind directions; mean zonal and meridional wind components in m/sec; persistence (defined as a ratio between wind vector sum and scalar wind velocity); and annual wind vector variations. All observations are according to Beaufort scale. Pt. III of this work is in process; it will be concerned with cloudiness, visibility and precipitation as well as air temperature for the same area. *Subject Headings:* **1. Sea temperature data 2. Wind data 3. Punched card applications 4. Marine climatic charts 5. Northeast Atlantic.**—*K.M.*

6.1–301 551.582.3:63

Thornthwaite, Charles W., **I believe that we should overhaul our ideas on what makes a good weather-forecasting service for farmers.** *Country Gentleman*, Philadelphia, Jan. **1954.** port. 1 p. **DA**—A brief article explaining the use that is made at Seabrook Farms, N. J., of accurate climatic data to help in long range planning of agricultural operations. Short range forecasts are useful, but the author believes climatic probabilities are more useful than long range forecasts. He also thinks the U. S. has lagged behind Sweden, Holland, Germany and Japan in climate study for agricultural operations, because of over emphasis on the needs of commerce. He suggests the compilation of detailed "climate maps" along the same lines as present soil maps. *Subject Headings:* **1. Climatic charts 2. Agricultural climatology.**—*M.R.*

CLIMATIC CHANGES

See also: **Thunderstorm location** (Norinder), 6.1–10.

6.1–302 551.583.3

Zeuner, F. E., **Pleistocene geology of Britain.** *Nature*, London, 173(4416):1178–1180, June 19, **1954.** table, 7 refs. **DWB**—Opens with destructive criticism of: R. G. CARRUTHERS, **Glacial drifts and the undermelt theory,** Newcastle upon Tyne, 1953, which explains all British tills as undermelt products of a single glaciation, although readvances and interglacials are accepted for Europe. The correlation of European glaciations now generally accepted is shown in a table. *Subject Headings:* **1. Glacial periods. I. Carruthers, R. G.**—*C.E.P.B.*

6.1–303 551.583.7:551.461.2

Baden-Powell, D. F. W., **Correlation of Pliocene and Pleistocene marine beds.** *Nature*, London, 172(4382):762–763, Oct. 24, **1953.** table, 14 refs. **DWB**—Climatic sequence in Britain is correlated with that of Mediterranean, using percentage of extinct species of mollusca. It is found that the temperature gradient in eastern Atlantic was steeper in Pliocene and Pleistocene than to-day. Glacial control was one, but not the only, factor in determining changes of sea level. *Subject Headings:* **1. Geological climates 2. Sea level variations.**—*C.E.P.B.*

6.1–304 551.583.7:535.336.2

Bagge, E., **Isotopen-Bestimmungen als Hilfsmittel paläontologischer Forschung.** [Isotope determinations as an aid in paleontological investigation.] *Umschau*, 54(12):364–366, June 15, **1954.** 6 figs. **DWB**—Mass spectroscope determinations of isotope ratios of oxygen in Jurassic belemnites (age 160 million years) compared with aquarium controls indicate sea surface temperatures of 17°C (winter) to 21°C (summer). *Subject Heading:* **1. Paleoclimatology.**—*C.E.P.B.*

6.1–305 551.583.7:56

Barghoorn, Elso S. (*Harvard Univ.*), **Evidence of climatic change in the geologic record of plant life.** (In: Shapley, Harlow (*ed.*), **Climatic change.** Cambridge, Harvard Univ. Press, **1953.** p. 235–248. 3 figs., table, 5 refs.). **DLC**—The author presents evidence for the hypothesis that land plants are probably the most valid and widespread biological indications of past climatic conditions. On the assumption that plant groups of the past had environmental requirements similar to those which they possess at present and that specific climatic and other physical conditions support a biotic population in general equilibrium with these conditions, the author reviews the paleontologic record of plants and its bearing on the history of climate and climatic change. *Subject Headings:* **1. Paleontology 2. Climatic changes.**—*I.L.D.*

6.1–306 551.583.7

Behrmann, W. (*Frankfurt a.M.*), **Das Klima der Präglazialzeit auf der Erde.** [Preglacial climate on the earth.] *Geologische Rundschau*, Stuttgart, 34(7/8):763–776, Sept. 10, **1952.** 25 refs. **DLC**—A discussion of Tertiary climate based mainly on climatic morphology. Author rejects pole-movements, continental drift and changes of obliquity as inconsistent with positions of climatic zones. There was a general cooling in Glacial period. On this assumption author reconstructs climatic zones of Tertiary but he does not explain the change of temperature. *Subject Heading:* **1. Paleoclimatology.**—*C.E.P.B.*

6.1–307 551.583.7(26):551.353

Emiliani, C. and Edwards, G., **Tertiary ocean bottom temperatures.** *Nature*, 171(4359): 887–888, May 16, **1953.** table, 6 refs. **DWB**—Paleotemperatures can be determined by ratio of ^{18}O to ^{16}O in fossil shells. Method is explained. Results from a deep-sea core of Tertiary age indicate relatively high bottom temperatures and suggest that in pre-glacial times there was greater mixing of oceanic waters and therefore more uniform world climate. *Subject Heading:* **1. Palaeoclimatology.**—*C.E.P.B.*

6.1–308 551.583.7:581.9:551.735/6

Gothan, Walther, **Geobotanische Provinzen im Karbon und Perm.** [Geobotanical provinces in Carboniferous and Permian.] *Forschungen und Fortschritte*, Berlin, 28(2):38–40, Feb. **1954.** 2 figs. **DLC**—Regional differentiation of plants began in Upper Carboniferous [Pennsylvanian]. Map shows distribution of Euramerican (warm moist), Cathay, Angara and Gondwana (Glossopteris) flora. The last developed in a cool climate at end of Permo-Carboniferous ice age, but Euramerican flora occurs in favored spots in S. Hemisphere. In Mesozoic world flora again became much more uniform. *Subject Headings:* **1. Geological climates 2. Permo-Carboniferous plant geography.**—*C.E.P.B.*

6.1–309 551.1:574.9:551.583.7

Prigge, Hans, **Die antarktischen Landflächen im Lichte bewegungstechnischer Untersuchungen.** [The Antarctic land surfaces in the light of continental drift.] *Polarforschung*, 3(2):132–135, **1951. DWB**—Biogeographical relations between America and Australia–New Zealand can only be explained by former land connections via Antarctic land mass, broken by continental drift. Climatic effects are briefly referred to. *Subject Headings:* **1. Biogeography 2. Continental drift 3. Geological climates.**—*C.E.P.B.*

MICROCLIMATOLOGY

See also: **Phenological investigation** (Kreeb), 6.1–48; **Microclimatic mapping** (Aichele), 6.1–57; **Frost damage** (Reichelt), 6.1–181; **Humidity for occupied spaces** (Priester), 6.1–228; **Water and plant growth** (Penman), 6.1–234; **Electrical conductivity of air** (Hess), 6.1–343.

6.1–310 551.584.42

Delany, M. J., **Studies on the microclimate of *Calluna* heathland.** *Journal of Animal Ecology*, Cambridge, Eng., 22:227–239, **1953.** 117 figs., 7 tables, 9 refs. **DA**—A study of environment of an insect 1 cm long at base of heather on Bicton Common near Exeter, compared with open ground. Temperature was measured with a thermistor and humidity with $\frac{1}{2}$ cm squares of paper impregnated with cobalt-thiocyanate, from ground to 15 cm (height of plants). Results at $\frac{1}{2}$ hour intervals during daylight on selected days are shown in numerous profiles and discussed. Temperature at ground level in heather showed a narrower range and was generally lower than in the open; insolation heated only the upper layer of less dense foliage. R.H. was highest at the base and decreased upwards. *Subject Heading:* **1. Microclimate of heathland.**—*C.E.P.B.*

6.1–311 551.584.5:711.4

Lawrence, E. N., **Microclimatology and town planning.** *Weather*, 9(8):227–232, Aug. **1954.** 18 refs. **DWB**—Effect of pollution and buildings of a town on diurnal variation of temperature and humidity is described. Effect of natural and man-made topography and surface on microclimate, and choice of building materials to avoid damage by extreme weather are discussed. The importance of meteorology in town-planning is emphasized. *Subject Headings:* **1. Urban effects 2. Town planning.**—*C.E.P.B.*

6.1–312 551.584.6:595.7

Lindauer, M., **Kälte- und Wärmetechnik im Insektenstaat.** [Cooling and warming technique in the insect state.] *Umschau*, 54(16):491–494, Aug. 15, **1954.** 8 figs., 3 refs. **DLC**—Ants use varying soil temperature to obtain best conditions for eggs and pupae, bringing them nearer surface or to warm side of anthills in sunny weather and taking them deeper in cold weather. In large wood-ants' nests the size of the structure maintains a sufficiently uniform temperature. Wasps and bees use heat-regulating methods; crowding round brood chambers and producing body heat by muscular action in cold weather, bringing in water drops and fanning to give ventilation in hot weather. *Subject Headings:* **1. Microclimate control by insects 2. Ant hills 3. Bee hives.**—*C.E.P.B.*

CLIMATIC CLASSIFICATION

6.1–313 551.585.55:551.577.38

Stenz, Edward, **Charakterystyka klimatologiczna suszy ze szczególnym uwzglednieniem suszy 1951 r.** [Climatological characteristic of drought with special reference to the drought of 1951.] *Przegląd Meteorologiczny i Hydrologiczny*, 5(3/4):16–23, **1952.** table, 6 refs. English summary p. 20. **DWB**—After discussing some definitions and corresponding formulas expressing drought and aridity and particularly those of GORCZIŃSKI, LANG and DE MARTONNE, the author introduces his own formula by which dryness of climate is defined by the ratio of annual evaporation and precipitation, $D=E/R$. The author applies his dryness index to monthly periods and demonstrates a course of the index for Warsaw in 1951, month by month. It shows that drought appeared in June but that the main phase occurred in Sept.–Oct. 1951. *Subject Headings:* **1. Aridity index 2. Drought in Poland** (1951) **3. Poland.**—*A.M.P.*

6.1–314 551.585.55:06

United Nations Educational, Scientific and Cultural Organization, **Directory of institutions engaged in arid zone research.** Pub. **1953.** 110 p. **DWB**—Questionnaires were sent to institutions in every country requesting information on location, facilities, staff and research programs along lines embraced by Arid Zone Research Committee of UNESCO. Replies were received from 90 institutions in 23 countries. These replies are organized, edited and published in this bulletin or Directory. Institutions are arranged by countries within each continent. A number of meteorological services are among those listed (e.g., Netherlands Meteorological Inst. at De Bilt, Holland). Most of the institutions are agricultural research stations or universities doing research in semi-arid regions. *Subject Headings:* **1. Arid zone research institutions 2. Arid zone research.**—*M.R.*

BIOCLIMATOLOGY

See also: **Respiratory diseases** (Berg), 6.1–141.

6.1–315 551.586:612

Maede, H. and Matzke, H., **Die Abkühlungsgrösse in ihrer Abhängigkeit von typischen Wetterlagen, dargestellt am Beispiel von Greifswald.** [The cooling power in relation to typical weather situations, as illustrated by Greifswald.] *Zeitschrift für Meteorologie*, 7(10):307–313, Oct. **1953.** fig., 4 tables, 12 refs. **MH-BH**—The mean cooling power, observed over a period of 13 years, is given for each month, separately for 12 characteristic weather situations. The cooling power was measured by the heat loss from a freely exposed black copper sphere with the temperature 36.5°C. It varies on the average from 31.0 in Jan. to 11.2 cal cm^{-2} s^{-1} in July and Aug. The standard deviation is 6.5 in April and 2.8 cal cm^{-2} s^{-1} in Aug. *Subject Headings:* **1. Cooling power 2. Synoptic climatology 3. Bioclimatology 4. Greifswald, Germany.**—*A.A.*

6.1–316 551.586:612.2

Hentschel, Gerhard, **Physiologisch wirksame Phasen bei meteorologischen Vorgängen in der Troposphäre.** [Physiologically effective phases in meteorological processes in the troposphere.] Germany. *Deutsche Demokratische Republik. Meteorologischer und Hydrologischer Dienst, Abhandlungen*, 4(31), **1954.** 30 p. 7 figs., 24 refs. **DWB**—Technique of tracing physiological reactions to atmospheric processes is discussed. Surface and upper wind, cloud type and temperature gradient (Wernigerode and Brocken) are compared with bodily and mental well-being. Some of the relations are statistically real. Depression comes with showery weather or thunder, light winds and temperature gradient $\geq 7°C/100$ m. Favorable are superadiabatic gradient and upper föhn. Profiles of R.H. and temperature up to 500 mb indicate that vertical air mass exchange extending to ice level is unfavorable, but mixing in a homogeneous mass is favorable to well-being. The numerous hypotheses as to how these conditions act on body and mind are discussed, but data must be more closely investigated. *Subject Heading:* **1. Weather sensitivity.**—*C.E.P.B.*

6.1–317 551.586:612.275

Sauberer, Franz and Silhavy, Friederike, **Über die Beeinflussung der Häufigkeit der Sterbefälle im Altersheim Lainz durch meteorologische Fronten.** [The influence of meteorological fronts on the frequency of death in the Home for Aged at Lainz.] *Wetter und Leben*, 5(8–10):161–168, Nov. **1953.** 5 figs., table, 6 refs. **MH-BH**—The relationship between frontal passage and deaths from acute heart failure, myocardial infarction, pulmonary embolism, hypertension, fresh bleeding and softening of the brain, is examined on the basis of 5048 cases. The time of frontal passage in Vienna was determined with the exactness of a half hour and the fronts were classified according to an intensity scale. Using the *n*-method the author shows an effect of fronts upon frequency of deaths. The manner of distribution of days with abnormally high deaths and with none or only one death incidence associated with frontal passages is analyzed. *Subject Headings:* **1. Frontal passage effects 2. Meteoropathology 3. Medical meteorology 4. Lainz, Austria.**—*I.L.D.*

6.1–318 551.586:616.6

Gressel, W. and Thalhammer, O., **Beitrag zur Frage der Beeinflussung des Menschen durch die Witterung im besonderen Falle des Diabetikers.** [On the influencing of men by weather in the special case of diabetics.] *Meteorologische Rundschau*, 7(7/8):129–133, July/Aug. **1954.** 7 figs., 11 refs. **DWB**—A close statistical relation is found between passage of surface and upper fronts and occlusions and urine sugar in sufferers from *Diabetes mellitus* at a child clinic. The way this comes about is discussed; authors consider that rapid pressure oscillations are probably the real cause. *Subject Headings:* **1. Medical meteorology 2. Diabetes.**—*C.E.P.B.*

6.1–319 551.586:628.8:629.13 551.574.7:629.13

Still, E. W., **Temperature control of jet-engined aircraft.** *Royal Aeronautical Society, London, Journal*, 57(506):89–102, Feb. **1953.** 24 figs., 2 tables. **DWB**—This paper is mainly concerned with engineering aspects of temperature control and pressurization of jet aircraft. It includes suggestions for automatic de-icing by hot engine air. *Subject Headings:* **1. Icing prevention 2. Temperature control of aircraft 3. Jet aircraft.**—*C.E.P.B.*

6.1–320 551.586:63

Aichele, Heinz (*Konstanz*), **Agrarmeteorologische Untersuchungen in der Baar.** [Agrometeorological investigations in Baar.] *Baden. Landeswetterdienst, Jahresbericht mit Abhandlungen*, **1951/1952.** p. 26–31. 22 refs. **DWB**—The Baar is a plain in Baden, surrounded by mountains with unfavorable agro-climatological conditions: deficiency in precipitation, strong winds, frequent fogs and killing frosts. Temperature ranges from −4.5° to 36.5°C in midsummer. A special agro-meteorological experimental station in Hüfingen was founded in 1948 in order to prepare killing frost warnings and to study the possibility of improving the microclimate on the basis of a dense observational network. *Subject Headings:* **1. Local climates 2. Killing frost 3. Agricultural climatology 4. Micrometeorological networks 5. Baar, Germany.**—*A.A.*

6.1–321 551.586:63

Gellert, J. F., **Klimabedingtheit und Wirtschaftsgeographische Struktur der Farmwirtschaft und Farmsiedlung in Südwestafrika.** [Climate limitation and economic-geographic structure of farm economy and farm colonization in Southwest Africa.] *Erdkunde*, Bonn, 2(4/6):282–302, **1948.** table, 5 figs. **DLC**—Rainfall and its variability are the main factors affecting the agricultural efficiency in Southwest Africa. The farming areas are shown on a map of annual isohyets. The ratio between sheep and cattle depends on rainfall, and a very close relation exists between the dry weight yield of plants and the annual rainfall, so that the necessary pasture area per capita can be computed. *Subject Headings:* **1. Agricultural climatology 2. Arid zones 3. Plant ecology 4. Southwest Africa.**—*A.A.*

6.1–322 551.586:63:551.575

Horiguchi, Hayao and Numabe, Toshikazu, **Notes on type of farming in the sea-fog district of Ohta Village.** *Tokyo. Forest Experiment Station, Bulletin*, No. 64:270–276, Oct.

1953. 5 tables, 4 refs. In Japanese; English summary p. 276. **DWB**—Ohta-mura is an isolated village on the Pacific coast in the sub-prefecture of Kushiro, Hokkaido. It is in the center of the sea-fog area in Northern Japan. The village was established in 1890 by a group of 440 settler families from Japan proper. Each family started off with 12.4 acres in an attempt to build up crop farms. Results were unfavorable due to the fog and intensely cold climate. As a result the type of farming underwent a change which led to the present dairy farming (1890 to 1900, Crop farming; 1900 to 1920, Cattle and horse breeding; 1921 to the present, Dairy farming). The number of families has decreased to one-fourth of the original and at the same time the acreage per family has increased to an average of 86.5 acres, without, however, showing any increase in the output of crops. It is suggested that to promote crop farming in this area the following improvements would be necessary: a) To establish sea fog damage prevention forests, b) To increase soil fertility, c) To improve pastures. *Subject Headings:* **1. Agricultural meteorology 2. Sea fog 3. Cold climates 4. Ohta-mura, Japan.**—*Authors' abstract.*

6.1–323 551.586:63

Thornthwaite, Charles W. (*Climatologist, Lab. of Climat., Johns Hopkins Univ.*), **Operations research in agriculture.** *Operations Research Society of America, Chevy Chase, Md., Journal*, 1(2):33–38, Feb. **1953.** fig. Abstracted from reprint. **DLC**—An account of the application of phenology to large scale planting and harvesting of peas as introduced by THORNTHWAITE at Seabrook Farms, N. J., 6 years ago. By planting several varieties, the planting season can be shortened and the harvest season extended. A climatic or growth unit calendar based on normal conditions is used for long range planning; and actual planting operations (for peas and other vegetables) modified by conditions prevailing during the current season, as these may vary somewhat from the normal. Also the interval between planting and harvest varies slightly from year to year, but can be predicted accurately well in advance of harvest date. *Subject Headings:* **1. Agricultural climatology 2. Phenology 3. Operations research 4. Climatic calendars 5. Seabrook Farms, N. J.**—*M.R.*

6.1–324 551.586:63

Tiurin, I. V., **Puti povysheniia urozhaĭnosti i dal'neĭshego razvitiia sel'skogo khoziaĭstva v nechernozemnoĭ polose.** [Methods to increase crop yields and further development of agriculture in non-chernozem belts.] *Priroda*, Moscow, 42(12):3–12, Dec. **1953.** 10 figs. **DLC**—In view of the resolution of the 19th Congress (1953) of the Soviet Communist Party on the necessity to increase the productivity of agriculture and livestock raising throughout the U.S.S.R. and MALENKOV's indication that this concerns the non-chernozem belt of European U.S.S.R. in particular, the author outlines the climatic and soil conditions of that vast area (250 million hectares) and suggests a series of measures for improving the quality and structure of the podzolized clay soils by efficient agricultural engineering, soil conservation, deepening of tillable layer, introduction of organic and mineral fertilizers and correct crop rotation. Charts showing the vegetative zones and subzones of the European part of U.S.S.R.; the yearly amount of precipitation, the number of days with temperature exceeding 5°C and the isothermal curves of Jan. and July of the non-chernozem belt are included. *Subject Headings:* **1. Agricultural climatology 2. Climatic charts 3. Vegetation zones 4. European U.S.S.R.**—*A.M.P.*

ENVIRONMENTAL INFLUENCES

See also: **Wind at neighboring stations** (Horney), 6.1–211; **Precipitation-altitude relationships** (Smallshaw), 6.1–268.

6.1–325 551.588.2:551.557.2(234)

Holzapfel, Rupert, **Zur Einflusshöhe der Alpen auf die allgemeine Strömung.** [On the height to which the Alps influence the general circulation.] *Meteorologische Rundschau*, 7(5/6):92–95, May/June **1954.** 2 figs., 2 refs. **DWB**—Winds at 1.5–16 km at Munich and Berlin, winter and summer half-years, show systematic differences of direction and velocity. West winds are most frequent, but there is a secondary maximum from east at Munich which

is absent at Berlin. There is a marked reduction of velocity from south at Munich. These are attributed to the effect of the Alps up to 14 km over Munich, 100 km to the north. *Subject Headings:* **1. Upper air winds 2. Orographic effects 3. Alps.**—*C.E.P.B.*

6.1–326 551.588.6

†Gumiński, Romuald, **Las jako czynnik makroklimaticzny.** [Forest as a macroclimatic factor.] *Poland. Państwowy Instytut Hydrologiczno-Meteorologiczny, Wiadomości Służby Hydrologicznej i Meteorologicznej*, 3(2):114–147, **1951.** 15 figs., 7 tables, 59 refs. **DWB**—The question of the influence of forests upon climatic conditions of land areas situated not in immediate proximity of forests, or the influence of forests on the macroclimate, is studied in detail. After presenting a general review of a number of works of European and American scientists on the question and analyzing the results of their investigations, the author takes up separately the questions of the influence of forests upon: 1) humidity of the air; 2) wind direction and speed and 3) precipitation. Paper concludes with a summary of results of the investigation (10 cases) showing that the influence of forests on the macroclimate is unimportant in all respects. Many tables and graphs, including some climatic and forest maps for Poland, illustrate the work. *Subject Headings:* **1. Forest influences 2. Poland.**—*A.M.P.*

6.1–327 551.588.7

Durdik, Miloš, **Vliv člověka na podnebí v Čechách v letech 1876 až 1925.** [Influence of human activities on climate in Bohemia during the period 1876–1925.] *Meteorologické Zprávy*, 6(2):65–67, May **1953.** fig. **DLC**—Mean annual rainfall amounts at stations throughout Bohemia for the period 1901–1925 are compared with those for 1876–1900. Excess or deficiency (1901–25 minus 1876–1900) is indicated on a map showing the location of each station. The comparison reveals that dry regions became dryer and wet regions wetter during the first quarter of the present century. This is attributed to deforestation and drainage at the beginning of the century. The necessity of a more carefully planned land amelioration policy is stressed. *Subject Headings:* **1. Climatic changes 2. Deforestation 3. Water losses 4. Bohemia, Czechoslovakia.**—*G.T.*

SYNOPTIC CLIMATOLOGY

See also: **Large scale weather processes** (Böer), 6.1–90.

6.1–328 551.589(4)

*Germany. Deutscher Wetterdienst, **Die Grosswetterlagen Mitteleuropas.** v. 6, no. 13, **1953.** [General meteorological conditions of Middle Europe.] charts, tables. **DWB, DLC**—Number 13 is the annual summary issue. Includes table of air mass frequency for each month for Berlin, Bremen and Karlsruhe; graph and table of frequency of grosswetterlagen for 1953; yearly period of sea-level pressure for Jan. to Dec. 1953 (amplitude and phase); annual totals of precipitation in % of normal annual means of pressure, departure of annual mean pressure and temperature from 1901–30 normal; relative topography 500/1000 mb for Northern Hemisphere; absolute 500 mb topography and anomalies of each; annual means of German "Climat" station data (11 surface and 7 aerological stations); a daily "grosswetterlagen" calendar for 1953; a description of the large scale circulation for 1953 and statistical verification of monthly (long range) forecasts of temperature and precipitation. In addition, an example of a 16-day pressure wave which circled the pole from April 23–June 25 is analyzed. *Subject Headings:* **1. Large scale weather processes 2. Atmospheric circulation 3. Northern Hemisphere charts 4. Pressure waves 5. Climatic data 6. Central Europe.**—*M.R.*

6.1–329 551.589.5(8)

*Diaz, Emilio L., **Interrelaciones entre anomalías mensuales de lluvias, temperatura, presión, gradientes y variaciones.** [Correlations between monthly anomalies of rain, temperature, pressure, gradients, and related variables.] *Meteoros*, Buenos Aires, 3(4):342–382, Oct./Dec. **1953.** 9 figs., 10 tables. Spanish and English summaries p. 342. **MH-BH**—Relations among monthly anomalies of precipitation, temperature, pressure and related variables are brought out; also control of temperature by wind frequency anomalies and

cloudiness. A regression equation of monthly precipitation anomalies in the crop and cattle raising section in Argentina has been calculated as a function of temperature gradients and air circulation ($r=0.67$). Precipitation in Southern Chile and Argentine Patagonia is analyzed in regard to south Pacific barometric gradient anomalies and also temperatures as related to the latter. Existence of a South American oscillation in temperatures is revealed (areas of correlation of contrary sign laying 2000 miles apart in a north-south direction). Formulas to express autocorrelation coefficients and correlation coefficients in associated areas of reverse sign are given (damped oscillations). Effect of cloudiness on temperature anomalies can be represented by an hyperbola as a function of mean temperatures. Excess of rain in the Argentine crop and cattle raising section and also intensified temperature gradients are linked to a decreased planetary circulation in South America. An increased gradient of pressure in the Pacific gives place to a dynamic trough east of the Andes range (monthly mean values). *Subject Headings:* **1. Climatic anomalies 2. Autocorrelations 3. Argentina.**—*Author's abstract.*

MISCELLANEOUS APPLICATIONS

COSMIC INFLUENCES

6.1–330 551.590.25

Van Diggelen, J., **Een vuurbollenvlaag boven Nederland.** [A fire ball shower over the Netherlands.] *Hemel en Dampkring*, 52(6):109–126, June **1954.** 12 figs., refs. **MH-BH**—Four fire balls were sighted over the Netherlands from Sept. 27 to Oct. 2, 1953. The author explains the method of determining the path of meteors on the basis of eye witness reports from several places. He then discusses the reports connected with the four fire balls and determines their paths and velocities. The analysis is based on 4 observations for the first fire ball, 189 observations for the second, 19 for the third and 98 for the fourth. *Subject Headings:* **1. Meteors 2. Fire balls 3. Netherlands.**—*G.T.*

6.1–331 551.590.25:621.396

Villard, O. G., Jr.; Peterson, A. M.; Manning, L. A. and Eshleman, V. R., **Extended-range high-frequency radio communication at relatively low power, by means of overlapping oblique reflections from meteor ionization trails.** *Science*, 117(3049):638–639, June 5, **1953.** 5 refs. **DLC**—Short account of radio wave propagation experiments over 800–1000 mi, suggesting that reflections from meteor trails can be successfully utilized for radio transmission on one frequency throughout the 24 hours (*see item* 5.5–225, May 1954, *MAB*). *Subject Headings:* **1. Radio wave propagation 2. Meteor trails.**—*A.A.*

VISIBILITY

See also: **Sea temp. meas. techniques** (Dmitriev), 6.1–185.

6.1–332 535.6 551.591.612

Harrington, R. E. (*Research Lab., National Carbon Co., Inc., Cleveland*), **Effect of color temperature on apparent brightness.** *Optical Society of America, Journal*, 44(2):113–116, Feb. **1954.** 3 figs., 2 tables, 8 refs. **DWB**—Two screens viewed side by side were illuminated by radiations approximating those of blackbodies of different color temperatures and matched in brightness at photopic levels. A group of 73 observers found that less light of the higher color temperature was needed to produce equality of brightness than would be required by the CIE normal observer. The average gain in apparent brightness was 1 percent per 100°K color temperature difference in the range 5400–6300°K. The gain decreases with the age of the observer. When 27 of the observers re-matched the screen colors using a "flicker" method, no gain in apparent brightness was obtained. Thus the CIE normal observer properly predicts equality of brightness under the experimental conditions used if the observer is allowed to respond only to brightness (flicker method). If the observer has time to color adapt, as in continuous side by side screen viewing, an increase in the apparent brightness of the higher color temperature screen results. *Subject Headings:* **1. Color temperatures 2. Brightness contrast 3. Physiological factors of visibility.**—*Author's abstract.*

6.1–333 551.591

Koschmieder, Harald (*Frankfurt Univ. Met. Geophysik. Institut*), **Theorie der horizontalen Sichtweite.** [Theory of horizontal visibility.] *Beiträge zur Physik der freien Atmosphäre*, Leipzig, 12(1):33–55; 12(3):171–181, **1925.** 5 tables, 10 figs., refs., eqs. **DLC**—One of the classical theoretical papers. Deals with the visibility of a (1) black body, (2) homogeneous and diffuse reflecting Lambert surface with the albedo $a=1$ and (3) selective and diffuse reflecting Lambert surface with an albedo dependent on the wavelength. The background is in every case the horizon. Brightness of sky must be measured. Results obtained do not depend on the knowledge of the separate processes of light scattering. The author shows how to evaluate the brightness integral with the aid of the observed brightness of the sky, discusses the visibility of objects on the horizon and outlines the applicability limit of his theory. In the second paper the same problem is treated from the viewpoint of the "contrast" defined as $K=\frac{H_z-H_h}{H_h}$. H_z—brightness of the object, H_h—brightness of sky, giving solutions for a black, white and red object and assuming that $K\mp 2\%$ is the visibility limit. *Subject Headings:* **1. Visibility theory 2. Sky brightness.**—*A.A.*

6.1–334 551.591.1

Linke, Franz (*Frankfurt a.M.*), **Sicht.** [Visibility.] *Handbuch der Geophysik*, Berlin, 8:621–650, **1942.** figs., refs., eqs. **DWB**—Besides a thorough review of the literature and theory of visibility and visual range, the author gives a comprehensive review of various aspects of the problem, accompanied by selected observational or derived data, nomograms and constants, tables, scales, etc. Visibility by day and visual range at night are differentiated and compared graphically. Relation of visibility to turbidity, opalescence, visibility instruments, observation data sources, statistical compilation of data, color visibility, visibility in fog, use of colored lights and filters are treated in detail. Problems of observation (personal errors, contrast, angle, etc.) are not neglected. *Subject Headings:* **1. Visibility 2. Visual range.**—*M.R.*

OPTICAL PHENOMENA

6.1–335 551.593.54 535.4

Evva, Franz, **Beiträge zur Theorie der Optik weisser Solen I. Einfluss der Polydispersität auf die Trübung weisser Solen mit kugelförmigen Teilchen.** [Contribution to the theory of optics of white salts I. Influence of polydispersion on the turbidity of white salts with spherical particles.] *Zeitschrift für physikalische Chemie*, 202, (3/4):208–220, Oct. **1953.** 5 figs., 18 eqs. **DLC**—A simple method of calculation is given, by which the absolute turbidity of white salts with spherical particles is calculable for various size distributions. The effect of different types of distribution (Gaussian, log-normal, exponential) on turbidity is discussed. In each case the maximum value of the extinction curve is decreased and shifted towards the smaller particle radii. Polydispersion tends to smooth out fluctuations or asymmetry in the extinction curve. *Subject Heading:* **1. Scattering of light.**—*From author's abstract.* (*C.E.P.B.*)

6.1–336 551.593.54:77:656.7

†Levin, B. IU., **Fotografirovanie skvoz' atmosfernuiu dymku.** [Photography through atmospheric haze.] *Zhurnal Tekhnicheskoĭ Fiziki*, Moscow, 16(9):1005–1022, **1946.** 7 figs., 10 tables, 13 refs., 26 eqs. **DLC**—A technical presentation of a great deal of data and factual information regarding transmission of light through haze with application to aerial photography. Effects of different concentrations of haze, angles of incidence (horizontal, vertical or slant photography) scattering, absorption, etc. considered quantitatively with equations, tables and graphs. *Subject Headings:* **1. Turbidity effects on aerial photography 2. Haze 3. Aerial photography.**—*M.R.*

6.1–337 551.593.55 535.33

California. Univ. Institute of Geophysics, **Atmospheric optics.** Contract AF 19(122)-453, Progress Reports, No. 5, 6, 7, June 1, Sept. 1, Dec. 22, **1952.** 3 pieces. figs. Photostat. **DWB**—Report No. 5 gives details of studies of active nitrogen. In No. 6, Pt. I is a report on

studies of rare nitrogen afterglows, Pt. II on the construction of the optical parts for a new high aperture spectrograph. Report No. 7 gives results of more recent progress in construction of the high aperture spectrograph and photoelectric decay studies in oxygen afterglows. *Subject Headings:* **1. Nitrogen afterglow 2. Spectrographs. I. Brook, Marx II. Silvernail, Chester J. III. Contract AF 19(122)-453.**—*M.R.*

6.1–338 551.593.55:535.33

Robley, R., **Remarques sur l'altitude de la couche de sodium responsable de l'émission crepusculaire.** [Remarks on the height of the sodium layer responsible for twilight emission.] *Annales de Géophysique*, 10(1):41–46, Jan./March **1954.** 4 figs., 10 refs., eqs. French and English summaries p. 41. **MH-BH**—The examination of the curves of decreasing crepuscular D-line intensity at high latitudes suggests a correct application of the zenith-horizon method for determining altitude of the sodium layer. The shape of the curves induces to suppose that the observed variations have their origin at the bottom of the layer. *Subject Headings:* **1. Sodium layer heights 2. Twilight spectra.**—*Author's abstract.*

6.1–339 551.593.63

Lacy, R. E.; Ellison, M. A. and Ashmore, S. E., **The halo display of 2 March 1954.** *Weather*, 9(7):206–215, July **1954.** 5 figs., 4 photos, 3 refs. **MH-BH**—Account of a very fine display seen over the whole of Britain from the Shetland Is. to Sussex. It included halos of 9–11°, 22°, 46° and 90°, parhelia of 22°, 46°, 90°, 120° and anthelion, arcs of contact to 22° and 46° halos, Parry and Lowitz arcs, circumzenithal arc, parhelic circle, supplementary parhelic circle and sun-pillar. A sketch and photos at Edinburgh, a systematic set of 12 diagrams and a perspective view from Wrexham are included. This was probably the finest halo display even recorded in Britain. *Subject Headings:* **1. Halo observation 2. British Isles.**—*C.E.P.B.*

6.1–340 551.593.653

Schindler, Gerhard, **Leuchtende Nachtwolken am 30 Juni 1953.** [Luminous night clouds on 30 June, 1953.] *Annalen der Meteorologie*, 6(3/4):125–126, **1953/4.** 11 refs. **MH-BH**—At Hamburg half an hour after midnight silvery white to blue wave-like clouds were observed. They are roughly estimated as at 82 km in 60½°N. moving at 5 km/min. *Subject Heading:* **1. Noctilucent clouds.**—*C.E.P.B.*

ELECTRICAL PHENOMENA

See also: **Meas. in ionosphere** (Seddon), 6.1–62; **Radon in atmos.** (Anderson), 6.1–113.

6.1–341 551.594.1/2 551.508.94

*Demon, L.; de Felice, P.; Gondet, H.; Kast, Y. and Pontier, L., **Premiers résultats obtenus au cours du printemps 1953.** [Preliminary results obtained in the spring of 1953.] *France. Centre National de la Recherche Scientifique, Journal des Recherches*, No. 24:126–137, Sept. **1953.** 12 figs., plate, tables. **MH-BH**—A symmetric field electrometer was installed at the desert station Beni-Abbes, Sahara. The apparatus is described and its circuit diagram presented. The atmospheric electric field was measured with this instrument during sandstorms (attempt was also made to obtain simultaneous sand particle distribution data). Experiments were also made to determine water content of sandy soil by electrical conductivity measurement. This latter technique was applied to determine the rate of depth infiltration of water into sand and diurnal variation of sand moisture near the soil surface. Finally, atmospheric temperature and humidity were measured with an aspiration psychrometer. Preliminary results of all measurements are presented. *Subject Headings:* **1. Electrometers 2. Atmospheric electricity measurements 3. Beni-Abbes, French Sahara.**—*G.T.*

6.1–342 551.594.12:551.510.535:523.75

Mitra, A. P. and Jones, R. E., **The enhancement of ionospheric ionization during solar flares.** *Journal of Atmospheric and Terrestrial Physics*, 5(2):104–106, May **1954.** fig.,

table, 5 refs., 2 eqs. **DWB**—From analyses of ionization equilibrium terms it is concluded that sudden enhancement of electron concentration in D region accompanying solar flares is due to photoionization through the whole region. *Subject Headings:* **1. D layer ionization 2. Solar flares.**—*C.E.P.B.*

6.1–343 551.594.13:551.574.1:551.584.61

Hess, V. F., **On the electrical conductivity and the nucleus content of air inside buildings.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 7:262–265, **1954.** 2 refs. English, German and French summaries p. 262–263. **MH-BH**—Paper by G. F. SCHILLING and J. CARSON (*see item* 5.2–301, Feb. 1954, *MAB*) is criticized; the sudden increases in conductivity are attributed to faults in the apparatus. *Subject Headings:* **1. Electrical conductivity of air 2. Indoor climates. I. Schilling, Gerhard F. II. Carson, Joan.**—*C.E.P.B.*

6.1–344 551.594.13:537.56

Siksna, Reinhards and Metnieks, Arvids, **Aufladung eines isolierten Rohrs bei Durchströmen von ionisierter Luft und Absorption der Ionen.** [Charging of an insulated tube by current through ionized air and absorption of ions.] *Zeitschrift für angewandte Physik*, 5(12):454–461, Dec. **1953.** 7 figs., 3 tables, 17 refs., 13 eqs. **DLC**—The insulated cylinder of an aspiration condenser through which ionized air is passing becomes charged by the absorption of ions at the walls. A formula is derived relating this absorption to the coefficient of diffusion and the velocity of the ions in the tube. The bearing on investigations of atmospheric ionization is discussed. *Subject Heading:* **1. Ionization.**—*C.E.P.B.*

6.1–345 551.594.14

Moraschinelli, E., **Misura della radioattivita atmosferica con emulsioni nucleari.** [Measurement of the radioactivity of the atmosphere by means of nuclear emulsions.] *Annali di Geofisica*, 6(4):561–567, Oct. **1953.** 11 refs. Italian and English summaries p. 567. **MH-BH**—A method of measuring atmospheric radioactivity by the employment of nuclear emulsions is described. The radioactive components are separated from the air by electrostatic separation into an electrode plate, following which, the plate is placed on the sensitive emulsion in order to obtain a registration of the emitted alpha particles. From a microscopic examination of the emulsion one determines the relative amount of atmospheric radioactivity and it is also possible to discriminate between the elements of the thorium family and those of the uranium-radium family. *Subject Headings:* **1. Atmospheric radioactivity measurements 2. Nuclear emulsions.**—*Author's abstract.*

6.1–346 551.594.14

Weller, Richard I., **The intensity of beta ray ionization of potassium, uranium and thorium.** *Journal of Atmospheric and Terrestrial Physics*, 5(1):1–10, March **1954.** 4 figs., 13 refs., 24 eqs. **MH-BH**—Measurements of ionization in a large shielded chamber over layers of different thickness of potassium sulphate, pitchblends and thorite ore are described. The ratios of ionization by beta radiation to that by gamma radiation were calculated as: uranium ore 1.45, thorite 0.76, potassium 6.50. Variation of radiation with height up to 1000 cm above earth's surface is calculated; beta radiation predominates up to 30 cm, gamma radiation above 60 cm, and above 100 cm it is almost the only ionizer from the earth. *Subject Heading:* **1. Radioactive emanations.**—*C.E.P.B.*

6.1–347 551.594.21

Braham, Roscoe R., Jr. (*Chicago Univ., Dept. of Meteorology*), **The energy of thunderstorm electrical activity.** *Geofisica Pura e Applicata*, 25:221–222, **1953.** 2 refs. **MH-BH**—Comments are expressed upon "Bemerkungen zum Energie Umsatz im Gavitta" by H. ISRÄEL, *Geofisica Pura e Applicata* 74:95–103, **1933.** The agreement between ISRÄEL's value for the energy loss to the thunderstorm through the electrical activity (2×10^5 kW) and that of the writer (3×10^5 kW) is considered fortuitous since the method of computation involved different assumptions. Furthermore, ISRÄEL's comparison of the energy of the electrical activity with that part of the total energy that exceeds the "normal energy of mixing" that would be ex-

pected from similar weather phenomena is only of academic interest since it is difficult to determine the magnitude of "normal energy." *Subject Headings:* **1. Thunderstorm electricity. I. Israël, H.**—*I.L.D.*

6.1–348 551.594.22:537.523

Köhrmann, W. and Raether, H., **Die Bedeutung des Kanalaufbaus für den Durchschlag in Luft.** [The importance of channel formation for discharges in air.] *Naturwissenschaften*, 41(17):400–401, Sept. **1954.** 2 figs., table, 7 refs. **DWB**—Authors give measurements of the potential excess for the static break-through of a spark from a charged plate in air at 760 mm with electrodes 0.5–2 cm apart. Results (16.6 kV at 0.5 cm, 55.8 at 2 cm) are verified by measurements of time of building up a discharge at pressure 450 mm and electrodes 3 cm apart. *Subject Heading:* **1. Electrical discharges.**—*C.E.P.B.*

6.1–349 551.594.5

Sandner, Werner, **Häufigkeit und Periode der Südpolarlichter.** [Frequency and periodicity of aurora australis.] *Forschungen und Fortschritte*, Berlin, 27(5):134–136, Nov. **1953.** 2 tables, 5 refs. **DLC**—Monthly figures of aurora in New Zealand, Tasmania, and S of 40°S mostly show maxima in spring and autumn. Annual values 1931–42 run parallel to sunspot numbers; there is also a periodicity of about 27.7 days. *Subject Headings:* **1. Aurora australis 2. Auroral frequencies.**—*C.E.P.B.*

6.1–350 551.594.5

Sandner, W., **Nordlicht-Tage 1950 in Mitteleuropa.** [Aurora days in Central Europe during 1950.] *Sternenwelt*, Munich, 3(5/6):112–113, May/June **1951. DLC**—Conforming to a yearly practice followed by *Sternenwelt*, 16 auroras observed in Central Europe during 1950 are listed by date and place of observation. The aurora of Feb. 20, 1950 is described as the outstanding auroral display of the year, equal to the superb phenomena of 1938 and 1949. *Subject Headings:* **1. Auroral observation 2. Central Europe.**—*G.T.*

6.1–351 551.594.5

Schubert, Günther (*Schwerin*), **Polarlichterscheinungen im Herbst 1951.** [Auroras in the fall of 1951.] *Die Sterne*, Leipzig, 28(7/8):148–150, 1952. 5 drawings. **DLC**—Auroral displays of Sept. 25 and Oct. 7 and 28, 1951 are described on the basis of visual observations in or near Schwerin (Meckl.), Germany. Drawings of some characteristic forms observed are presented. *Subject Headings:* **1. Auroral observation 2. Schwerin, Germany.**—*G.T.*

6.1–352 551.594.5

*Störmer, Carl, **Results of the observations and photographic measurements of aurora in Southern Norway and from ships in the Atlantic during the Polar Year, 1932–1933.** *Geofysiske Publikasjoner*, Oslo, 18(7), **1953.** 117 p. 7 figs., numerous tables, photos. **DLC, MH-BH**—Contains a list of stations with geographic coordinates, maps of station locations, list of dates on which auroras were photographed, list of additional nights on which visual observations only were made, a chronology of auroras observed in Southern Norway, detailed descriptions of selected auroras and list of nights when no auroras were seen. Extensive tabular data include frequency of heights of all measured auroral points, frequency of heights of the lowest and highest points of the different auroral forms and height and situation of measured auroral points. The observations from eight ships are presented in a table and as a chronology. *Subject Headings:* **1. Auroral data 2. Auroral heights 3. Polar Year data, 1932–1933 4. Southern Norway 5. Atlantic Ocean.**—*M.L.R.*

PART II. BIBLIOGRAPHY OF BIBLIOGRAPHIES ON METEOROLOGY

By: *Malcolm Rigby and Dorothy M. Gropp*

INTRODUCTORY NOTE

In this issue we have attempted to organize in a systematic manner the most fruitful sources of references to literature on Meteorology in general for the benefit of those who wish to make a thorough survey of the literature in any specific subject or geographic area of meteorology or climatology or in peripheral fields.

In the next issue (Vol. 6, No. 2, Feb. 1955) we shall attempt to organize many of the sources of *special subject bibliographies* already compiled but not necessarily exhaustive of the literature in the particular subject area. Most of these bibliographies are parts of textbooks or monographs, progress reports (advances) in a given field, etc.

A few of the Card Catalogs and Accession lists of libraries, the National Bibliographies (now issued periodically by most civilized countries), and only those subject or regional bibliographies which cover a broad sector of the world's literature on meteorology have been included in the present issue. It is unfortunate that none of the meteorological bibliographies which have been issued over a period of 20 or more years have had cumulative indexes published in order to save the searcher from the necessity of going through scores of separate issues to find any or all the material on a given subject or by a given author unless he knows the exact year in which the article was indexed. *Chemical Abstracts* has decennial cumulative indexes, which are indispensable for locating a large amount of material on any specific subject, i,e., Atmospheric Chemistry, but naturally it covers a very limited area of meteorology. The cost of such cumulative indexes runs to only a small percentage of the total cost of the abstracting and indexing for the period involved, so it is hard to see why so few abstracting agencies make this final and obvious step in "buttoning up" the work of a decade or more so it would be infinitely more useful.

The first indexes now generally available which contain any great number of references to articles on meteorology are the Cumulative indexes to the Philosophical Transactions of the Royal Society issued for the periods 1665–1677, 1677–1693 and 1665–1700, the latter containing references to 144 items on Meteorology and 86 on Hydrology, and one for 1665–1780, published in 1787, listing 600 items on 18 subjects relating to meteorology. Other early bibliographies were those of JULIUS BERNHARD VON ROHR in 1724 (Leipzig), with 43 pages devoted to meteorology, and of G. R. BÖHMER in 1789 on fog, dew, rain, snow, hail and ice.

The greatest bibliographic activity of the 19th century occurred in the period from 1880–1890, when HELLMANN (1883), FASSIG (1889–91) and many others put out national or international bibliographies of great extent and thoroughness. Since 1900 most efforts have been toward issuing annual classified bibliographies for reference rather than information purposes, so they were necessarily issued 2–5 years after the date of the material included in each tome or volume. Material for information purposes has been confined for the most part to limited coverage in the national meteorological or geophysical periodicals such as the *Monthly Weather Review*, *Meteorologische Zeitschrift*, *Rivista di Meteorologia Aeronautica*, etc., or to library accession lists which received narrow circulation.

Meteorological Abstracts and Bibliography has attempted to satisfy all 3 needs: (1) information of recent publications to appear in 2 or 3 months (see Part III of each issue); (2) coverage of the important literature by means of abstracts and systematic indexing within a year following publication of the article or book, wherever possible, for reference purposes; and (3) more thorough and permanent indexing by means of cumulative 5 or 10 year indexes. The chances of a given article published in 1952 being found in a 1952 index is only 20 or 25%, but of being found in a 1950–1954 index is 80%, and in a 1950–59 index >90%.

The material included in this **Bibliography of Bibliographies** is arranged in general under the following 8 major headings. For more specific information about the nature or form of the bibliographies see the outline which follows.

GENERAL ARRANGEMENT

I. **Major Serial Bibliographies in Meteorology,** p. 85
II. **Serial Bibliographies in Broader Fields,** p. 87
III. **Scientific Periodical Containing Bibliographies,** p. 95
IV. **Cumulative Indexes to Single Periodicals,** p. 96
V. **Library Accessions and Catalogs,** p. 100
VI. **National Bibliographies,** p. 103
VII. **Regional and Climatological Bibliographies,** p. 109
VIII. **Miscellaneous Bibliographies Having Broad Coverage,** p. 116

OUTLINE OF CONTENTS

Subject Matter
Bibliographies, 6A–8
Astronomy, 6A–64, –74, –75, –83, –100
Physics, 6A–56, –68, –74, –100
Applied Mechanics, 6A–12
Chemistry, 6A–19, –22, –68
Geology, 6A–13, –68, –107
Geophysics (general), 6A–12, –18, –25, –29, –37, –41, –44, –57, –66, –74, –80, –83, –87, –97
Terrestrial Magnetism, 6A–2, –13, –22, –27, –38, –41, –44, –49, –59, –62, –68, –69, –73, –75, –79, –84, –87, –108, –144
Oeanography, 6A–11, –12, –13, –14, –15, –22, –25, –27, –38, –53, –59, –62, –72, –74, –80, –83, –87, –98, –106, –108, –111, –112, –113, –114, –135, –138
Hydrology, 6A–13, –46, –72, –74, –78, –80, –85, –102, –135, –141
Meteorology, 6A–1 to –5, –7, –13, –38, –41, –42, –45 to –50, –52, –54, –55, –57 to –77, –80, –81, –83, –84, –86, –87 to –96, –98 to –100, –103, –104, –108, –111, –115, –116, –118, –126, –127, –129, –130, –132, –136, –138, –140, –142, –145, –147
Aerology, 6A–5, –13, –38, –98
Atmospheric physics, 6A–22, –44, –80, –83, –146
Climatology, 6A–6, –11, –13, –15, –16, –23, –24, –31, –34, –35, –51, –97, –101, –105, –109, –112, –117, –119, –120 to –125, –128, –131, –133 to –135, –137, –138, –141, –143, –146
Biology, 6A–17
Ecology, 6A–13, –115
Medicine, 6A–73, –83, –100
Aeronautics, 6A–9, –52, –74
Agriculture, 6A–10, –13, –29, –34, –35, –95, –100
Geography, 6A–11, –13, –15, –23, –51, –83, –97, –111
Ecology, 6A–13, –115

Arrangement
U.D.C., 6A–2 to –4, –6, –7, –28, –30, –40, –42, –43, –45, –52, –54, –61 to –63, –65, –66, –70, –71, –76, –93, –118, –139
Author arrangement, 6A–5, –13, –14, –69, –76, –81, –82, –90, –97, –100, –102, –114, –115, –123, –125, –128, –129, –131, –135, –136, –144
Subject arrangement, 6A–9, –10, –11, –12, –15 to –23, –25, –29, –31, –32, –34, –35, –37, –38, –41, –44, –46, –47, –64, –68, –72 to –74, –78, –79, –80, –83, –87, –95, –96, –100, –103, –104, –107, –108, –111, –138, –140, –141, –143 to –145
Chronological arrangement, 6A–1, –109, –112, –116 to –119, –132, –144, –146
Regional arrangement, 6A–105, –106, –108, –121, –131, –147

Form of Work
Periodical
Weekly, 6A–16, –32, –65, –71
Semi-monthly, 6A–19, –21
Monthly, 6A–7, –9 to –12, –16, –17, –22, –29 to –31, –33, –34, –38, –43, –46, –48, –50, –100
Bi-monthly, 6A–37, –41, –47
Quarterly, 6A–24, –25, –44, –45, –49, –51, –52, –70
Semi-annual, 6A–36
Annual, 6A–2, –4, –14, –15, –18, –20, –23, –85, –104
Irregular, 6A–26 to –28, –62, –76
Serial (but not regular), 6A–46, –49, –78
Monographic (but issued serially), 6A–1, –3, –6, –8, –13
Indexes to journals, 6A–53 to –61
Accession lists, 6A–62, –63, –65, –66, –68 to –71, –76
Card catalogs, 6A–65, –67, –74, –76, –77
Card form publications, 6A–4, –5, –20, –78

Scope
International, 6A–1, –2, –4, –7, –10, –11, –12, –15, –19, –20, –21, –22, –27, –29, –30, –31, –33 to –39, –42, –45, –46, –52, –62, –63, –64 to –71, –73, –74 to –76, –78, –79, –85, –139 to 147
National
Argentina, 6A–49, –78
Canada, 6A–18, –80, –102
England, 6A–58, –77
France, 6A–55, –79, –81, –82
Germany, 6A–47, –53, –54, –59, –83 to –85
Hungary, 6A–79
India, 6A–25, –79, –86
Italy, 6A–87, –88
Japan, 6A–79, –89
Mexico, 6A–90
Netherlands, 6A–91
Norway, 6A–79

Poland, 6A–92
South Africa, 6A–6
South Asia, 6A–40
Spain, 6A–57, –93
Sweden, 6A–79, –94
Switzerland, 6A–95, –96, –98
U.S.S.R., 6A–97, –99, –100, –138
United States, 6A–24, –26, –32, –56, –60, –61, –77, –101, –102, –103, –104
Regional (Geographic)
Africa, 6A–117, –121, –129, –131
Algeria, 6A–124
Antarctica, 6A–107, –111
Arctic, 6A–13, –106, –107, –109, –110
Argentina, 6A–123, –125
Australia, 6A–119
Austria, 6A–126
Belgian Congo, 6A–127
Belgium, 6A–78
Brazil, 6A–128
China Seas, 6A–116
Colombia, 6A–72
Denmark, 6A–78
East Indies, 6A–119
France, 6A–78
Germany, 6A–78
Indian Ocean, 6A–116
Libya, 6A–132
Mediterranean Sea, 6A–116, –121, –131
Middle East, 6A–121
Near East, 6A–120
Netherlands, 6A–78
New Zealand, 6A–119, –133
Northern Hemisphere, 6A–106
Norway, 6A–78
Pacific, 6A–112 to –116
Pakistan, 6A–134
Peru, 6A–135
Philippine Island, 6A–116
Poland, 6A–78
Sierra Leone, 6A–116
South Africa, 6A–6, –136
South America, 6A–122
Southeast Asia, 6A–116, –119, –121
Sweden, 6A–78
Switzerland, 6A–78, –137
United States, 6A–16, –78
Language
Afrikaans, 6A–6
Catalan, 6A–93
Dutch, 6A–91
English, 6A–1 to –3, –6 to –13, –16 to –20, –24 to –30, –32 to –36, –39 to –44, –50, –56, –58, –60 to –63, –65, –67, –70, –73 to –77, –79, –80, –86, –89, –97, –99 to –102, –104 to –123, –129, –130, –133, –134, –136, –138, –139, –140, –143 to –147
French, 6A–4, –15, –22, –45, –55, –64, –81, –82, –103, –124, –127
German, 6A–5, –21, –23, –37, –38, –47, –48, –51, –53, –54, –59, –66, –68, –84, –95, –96, –126, –137, –141, –142
Hungarian, 6A–69
Israel, 6A–70
Italian, 6A–14, –52, –87, –88, –131, –132
Polish, 6A–92
Portuguese, 6A–128
Russian, 6A–31, –46, –98, –110
Spanish, 6A–29, –49, –57, –62, –72, –90, –125, –135
Swedish, 6A–94
Alphabetical list of significant sources
Monographic Bibliographies
Antarctic bibliography, 6A–111
Arctic bibliography, 6A–13
Bibliographie der aerologischen Literatur, 6A–5
Bibliographie van Meteorologiese Streekliteratur (South Africa), 6A–6
Compendium of Meteorology, 6A–140
F.I.A.T. Review of German Science, 1939–1946, 6A–83
Köppen-Geiger Handbuch der Klimatologie, 6A–105
Repertorium der Deutschen Meteorologie, 6A–84
Signal Corps, Bibliography of Meteorology, 6A–1
World bibliography of bibliographies, 6A–8
Periodical bibliographies
Bibliographie Météorologique Internationale, 6A–4
Bulletin Analytique, Pte. 1, 6A–22
Chemical Abstracts, 6A–19
Current Geographical Publications, 6A–11
Fortschritte der Physik, 6A–21
Geographisches Jahrbuch, Gotha, 6A–23
International Catalogue of Scientific Literature, F, Meteorology, 6A–2
Meteorological Abstracts and Bibliography, 6A–7
La Météorologie, Paris, 6A–45
Meteorologiia i Gidrologiia, Moscow, 6A–46
Meteorologische Rundschau, Bad Kissingen, 6A–47
Meteorologische Zeitschrift, Berlin, 6A–48
Petermanns Geographische Mitteilungen, Gotha, 6A–51
Physics Abstracts, London, 6A–30
Referativnyĭ Zhurnal, 6A–31
Royal Meteorological Society, Bibliography of meteorological literature, 6A–3
Snow, Ice and Permafrost bibliography, 6A–36
Zeitschrift für Meteorologie, 6A–48

I. MAJOR SERIAL BIBLIOGRAPHIES IN METEOROLOGY

6A–1 551.5:016

†U. S. Signal Corps, **Bibliography of meteorology.** A classed catalogue of the printed literature of meteorology from the origin of printing to the close of 1881; with a supplement to the close of 1887, [v. 3–4, 1889] and an author index. Edited by Oliver L. Fassig. Wash., D. C., **1889–1891.** 4 v. (v. 1, 1889, v. 2–4, 1891) Lithographed. Supplementary material incorporated chronologically in each subject section. Author index in each volume. v. 1, **Temperature.** v. 2, **Moisture.** v. 3, **Winds.** v. 4, **Storms. DWB, DLC**—This catalog of about 60,000 titles comprises the most ambitious and intensive bibliographic project ever undertaken in meteorology. It was begun on the initiation of GENERAL W. B. HAZEN and PROF. CLEVELAND ABBE, and had the official backing of the newly formed IMO. Catalogs of GEORGE J. SYMONS in London (18,000 titles) which contained PROF. ANDRÉ POËY's catalog prepared at Paris; PROF. ABBE's catalog of 11,000 titles; GUSTAV HELLMANN's (6A–84) in Germany, and smaller ones from Japan, Norway (PROF. MOHN), Poland, Portugal, Romania, Russia (WILD and WOEÏKOV), S. Africa, Sweden, Australia, and Austria (HANN) were incorporated, and libraries in the U.S.A. were combed for additional material. In the 4 volumes which were actually published herein, there were 16,200 titles of which 8,000 or 50% were to be found in the library of the U. S. Signal Corps (U. S. Weather Bureau). The coverage for 1882–89, which is in the supplementary portion of each volume, is less complete than the main catalog (prior to 1882) but is, nevertheless, the most complete source of bibliographic material in those subject areas of meteorology for that period. The work was begun late in 1881 by C. J. SAWYER, Signal Office Librarian, assisted by O. L. FASSIG and H. E. HILTON, and continued intensively, involving correspondence with meteorologists and librarians all over the world, until 1889, when owing to repeated failure to get money appropriated for publication, the first volume (**Temperature**) containing 4400 titles was lithographed for limited distribution. The subsequent 3 volumes appeared in the next 2 years and then the project was dropped, though repeated efforts were made in the next fifteen years to fulfill the obligation to international meteorology by publishing the remaining 40,000 or more titles. The classification scheme which was selected as the most useful, was that of DR. A. LANCASTER of the Belgian Service, modified by MR. SAWYER. The arrangement is chronological within each section or sub-section—references go back to as early as 1590. The author indexes give brief subject indication and year of publication. *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology. I. Fassig, Oliver L.** *(ed.).—M.R.*

6A–2 551.5:016

†International Catalogue of Scientific Literature, F, Meteorology, including Terrestrial Magnetism, v. 1–14, 1901–1914. London, 1902–1919. Annual. Published for the International Council by the Royal Society of London. In two sections, continuously paged: author catalogue and subject catalogue. "The **International Catalogue of Scientific Literature** is in effect a continuation of the Royal Society's **Catalogue of Scientific Papers** covering the period 1800–1900." **DLC**—The meteorology section of the International Catalog was compiled by the Smithsonian Institution and other similar institutions in >20 countries and arranged by author and by subject, using the binary system which was standard in many countries until 1936, when the U.D.C. was adopted by the IMO. In each annual volume there were from 1000 to 1500 entries. Original titles only are included if in English, French, German, Latin or Italian, and in the original language and one or other of those languages if in some other language. Cyrillic titles are included where appropriate. A complete schedule of the subject classification system, as well as an alphabetical subject index, appear in English, French, German and Italian in each volume. About 120 subjects are recognized in meteorology, which is one of 17 major subdivisions of science. Limitation in funds, as well as difficulties encountered by the 30 or more regional Bureaus, limited the scope and speed of publication of the catalog, and the First World War finally brought an end to the project which (for meteorology) was continued by the Royal Meteorological Society (*see* 6A–3). All told this series comprises author and subject references to about 15,000 scientific papers in meteorology and terrestrial magnetism. Only a few of the articles are annotated, but bibliographic citations are quite complete and accurate. *Subject Headings:* **1. Meteorology bibliographies 2. Bibliographies on meteorology 3. Periodical bibliographies. I. Royal Society of London.**—*M.R.*

6A–3 551.5:016

†Royal Meteorological Society, London, **Bibliography of meteorological literature. . . .** London, Royal Meteorological Society, [1922]–1950. 6 v. **DWB, DLC** (holdings inc.)—This unannotated bibliography is a continuation of the Bibliography of meteorological works received in the libraries of the Royal Meteorological Society and the Meteorological Office of Great Britain, published in the Quarterly Journal of the Society from Jan. 1917–Oct. 1920. Subsequent numbers were issued at 6-months intervals until the final number for July–Dec. 1948. Up to the end of 1935 entries were numbered in accordance with the Schedule of Classification (F. Meteorology) of the International Catalogue of Scientific Literature and arranged alphabetically under major divisions of meteorology.

From 1936 to 1948 the U.D.C. classification was used. About 18,000 items appear under the International Catalogue Classification (1920–35), and 13,000 items under the U.D.C. (1936–48). (*Same item as* 5C–164, March 1954, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. U.D.C. bibliographies 4. Periodical bibliographies.**—*C.E.P.B.*

6A–4 551.5:016

†France. Météorologie Nationale, **Bibliographie Météorologique Internationale,** v. 1–12, **1921/24–1932;** Nouvelle Serie, v. 1–7, **1933–1939;** [unnumbered], 1946– Latest issue seen, 1952, Pts. 1–4. Annual. Irreg. for the war years. Some years issued in conjunction with the Société Météorologique de France. Title varies: 1921–1932, Bibliographie Météorologique; 1933–1934, Bibliographie Internationale de Météorologie Generale. 1949– format changed. 1945– 4 fascicules per year. 1952, Pts. 1–4 issued as *World Meteorological Organization, OMM,* No. 17, utilizing the material and editorship of the Météorologie Nationale. **DWB, DLC**—Classified and partially annotated (in French) bibliographies covering periodical literature from all over the world. The material is arranged according to the U.D.C. scheme for meteorology (551.5). An author index and a subject index (with corresponding U.D.C.) are included. Cross reference is provided by repeating entries under the related sections. From 1500–2500 items appear in the volumes for a year. The entries are supposed to be only those produced during the year, but in order to close the volume within 1 or 2 years it was necessary to neglect much material that did not come to the attention of the Météorologie Nationale until later. (*Same item as* 4.9–14, Sept. 1953 and 5C–65, March 1954, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. U.D.C. bibliographies 4. Periodical bibliographies. I. World Meteorological Organization.** —*M.R.*

6A–5 551.587:016

†Keil, Karl, **Bibliographie der aerologischen Literatur 1929–1934 [and] 1934–1935.** [Bibliography on aerological literature, 1929–1934 and 1934–1935.] Berlin, Internationale Kommission für die Erforschung der Freien Atmosphäre, **1935.** 2 v. unpaged. Alphabetical by author, on $10\frac{1}{2} \times 7$ cm. spaces for clipping and filing. **DWB**—This excellent but short-lived series of card-form bibliographies on aerological literature was prepared and edited by Dr. Karl Keil under the auspices of the International Meteorological Organization, International Aerological Commission. The cards are attached 8 to a page with a row of 21 numbers at the top of each card for key-punching. Authors, titles and serial citations are given for each item, but no abstracts. Most of the world's meteorological periodicals are covered but only material on the free atmosphere is included. In all about 2500 items are included on the 300-odd pages comprising the series. *Subject Headings:* **1. Aerological bibliographies 2. International meteorology bibliographies 3. Card-form bibliographies 4. Periodical bibliographies. I. International Aerological Commission.**—*M.R.*

6A–6 551.5:016(68)

†South Africa. Weather Bureau, **Bibliografie van Meteorologiese Streek-literatuur, Vol. 1, Suidelike Africa, 1486–1948.** [Bibliography of regional meteorological literature, v. 1, Southern Africa, 1486–1948.] Its. *W. B.* 12, **1950.** 412 p. 2911 refs. in classed order. Title-page and text also in English. Vol. 1 compiled by R. J. Venter. **MH-BH**—An excellently prepared, edited and bound volume containing 2900 references to articles or books on meteorology and climate of South Africa including Angola, British East Africa, Zanzibar, Tanganyika, Mozambique, Southwest Africa, northern Rhodesia, Nyasaland, Madagascar, Mauritius, the South Atlantic and the western Indian Ocean arranged according to the U.D.C. A classified index by the above regions, an author index, an outline of the U.D.C. scheme for meteorology in English and Afrikaans, and a tabulation of observational data available for each of these regions by type of data and chronological period, make this a most valuable reference. Vol. 2 on the Antarctic and Vol. 3 on N. Africa are in preparation. (*Same item as* 2.5–5, May 1951, *MAB.*) *Subject Headings:* **1. Bibliography on climatology 2. Climatology bibliographies 3. Climate of South Africa 4. South Africa. I. Venter, R. J.** (*comp.*).

6A–7 551.5(098.8)(05):016

†Meteorological Abstracts and Bibliography, v. 1, no. 1, Jan. **1950–** Latest issue, v. 6, no. 1, Jan. 1955. Issued by American Meteorological Society. Monthly. Price: $8.00 from the Society, 3 Joy Street, Boston 8, Mass. Editor, Malcolm Rigby. Address, P. O. Box 1736, Wash. 13, D. C. **DWB**—Pt. I, Current abstracts; Pt. II, Special annotated bibliography; Pt. III, Listing of contents of journals primarily meteorological; Pt. IV, Author, subject and geographical indexes. Annual cumulative author, subject, geographical and journal indexes comprise December issue. A list of the special annotated bibliographies published from Jan. 1950 through Nov. 1954 and projected for 1955 will be found on p. iii of this issue. Entries include full name of author and place of residence if available, original title (unless in Oriental languages) and translation of title into English, title of

ournal or place of publication and other bibliographic information; location of piece abstracted; lescriptive (sometimes informative) abstracts of current meteorological (including upper at-nosphere, hydrometeorology and climatology and some physical oceanography, terrestrial magnetism nd astrophysical papers) literature from every country. In special bibliographies the material is sually arranged chronologically. Most of the recent literature and important material of earlier intage is selected to give a representative cross section showing the progress in a limited subject or eographic area. A detailed and systematic subject and geographic outline precedes each bib-iography. Contents of most of the current journals or serials which contain several meteorological rticles are listed in Part III; this material is not classified or indexed. Occasional compendiums or ollected works are also analyzed in Part III. Author, subject and geographic indexes are included n each issue and in the December or Index issue of each year; the annual author index includes origi-al titles, and an index of serials is included. Material is obtained by gift, exchange, loan from the ibrary of Congress and from the libraries of the U. S. Weather Bureau, Blue Hill Meteorological Observatory, and the Meteorological Office in London (Harrow). All entries in Parts I and II are lassified according to the U.D.C. system (551.5 for Meteorology) and in addition contain from 1 to Subject Headings, which are used in indexing. *Subject Headings:* **1. Meteorology bibliographies . Abstracting periodicals 3. Meteorology abstracts 4. Subject bibliographies 5. Periodical ibliographies. I. American Meteorological Society.**—*M.R.*

II. SERIAL BIBLIOGRAPHIES IN BROADER FIELDS

6A–8 016:016:551.5

†Besterman, Theodore, **World bibliography of bibliographies and of bibliographic catalogues, alendars, abstracts, digests, indexes and the like.** 2d ed. rev. and greatly enl. throughout. Lon-lon, Privately printed by the author, **1947–1949.** 3 v. Arranged by subject heads (inc. bibli-graphies of an individual's works), with author index in v. 3. First edition, 2 v. (index in v. 2), rinted by author, **1939–1940. DLC**—Under the heading Meteorology (cross referenced from Climatology) on p. 1894–1895, there are listed 21 major bibliographies from 1842 to 1943, with full ibliographic detail. *Subject Headings:* **1. Bibliography of bibliographies 2. Meteorology bib-iographies.**—*M.R.*

6A–9 629.13(05):016(048.8)

†**Aeronautical Engineering Review,** v. 1, no. 1, April **1942**- Latest issue seen, 13(12), Dec. 1954. Sub-title: Successor to the Aeronautical Review Section of the Journal of the Aeronautical Sciences. Monthly. Editor varies. Pub. by the Institute of the Aeronautical Sciences Inc., New York. **DLC**—Each individual issue contains an extensive section of reviews on subjects of interest to viation or aeronautics. Section (30) entitled Meteorology, contains references to a dozen or so rticles from meteorological or aviation magazines or reports of investigations by aeronautical esearch institutions. Under Flight Operation Problems (31) are reviews on Climatization, Ice Prevention and Weather Hazards. Other sections such as Instruments (9), Electronics (3), Aviation Medicine (19), Aerodynamics (2), Gliders (35), etc. should be examined. *Subject Headings:* **1. Aero-autics reviews 2. Aeronautical meteorology abstracts 3. Bibliography on aeronautical meteor-logy. I. Institute of the Aeronautical Sciences.**—*M.R.*

6A–10 551.5:63(05):016

†**Agricultural Index, 1916/1918–** Latest issue seen, Oct. 1954. Sub-title: Subject index to a elected list of agricultural periodicals and bulletins. Issued by H. W. Wilson, New York City. Monthly except Sept. Cumulates at intervals throughout the year. Arranged alphabetically under ubject headings. This index comes out in an annual cumulative issue, which is then cumulated very third year and issued as a 3-year cumulation, the cumulative volume taking the place of the nnual issue. **DLC**—Numerous items on agricultural and biological meteorology or climatology re to be found under the subject headings: meteorology, climate, phenology, rain and rainfall, droughts, evaporation, snow, storms, weather, winds, etc. Entries are not so numerous as in the **Bibliography of Agriculture** (*see* 6A–34) but are more complete and are cumulative for 3 years. *Subject Headings:* **1. Agricultural indexes 2. Bibliography on agricultural meteorology.**—*M.R.*

6A–11 551.582:016 551.46:016

†American Geographical Society, N. Y., **Current Geographical Publications. Additions to the Research Catalogue of the . . . Society,** v. 1, no. 1, Jan. **1938–** Latest issue seen, 17(7), Oct. 1954. Monthly except July and Aug. Annual indexes, arranged by subject, by author, and by photograph. Reproduced from typescript. **DLC**—This is one of the richest and most conveniently arranged ources of current bibliographic material on meteorology, climatology and oceanography, especially hat of a regional nature. The sections numbered 45 and 46 deal with oceanography and meteor-ology, respectively, and the regional entries which are subdivided under the continents by countries

have cross references to the subjects. About 500 items are found in each year's 10 issues. Atlases, historical and geographical material also appears in these lists which are really "accession lists" of the library of the American Geographical Society in New York. *Subject Headings:* **1. Climatology bibliographies 2. Regional bibliographies 3. Oceanography bibliographies 4. Bibliography on climatology 5. Periodical lists.**—*M.R.*

6A–12 531/534:551.5:016(05)(048.8)

Applied Mechanics Reviews, Easton, Pa., v. 1, no. 1, Jan. **1948–** Latest issue seen, 8(2), Feb. 1955. Pub. by the American Society of Mechanical Engineers. Sub-Title: Critical Review of the World Literature in Applied Mechanics and Related Engineering Science. Editor, Martin Goland. Price: $12.50; foreign $13.25 from its headquarters, 29 West 39th St., N. Y. 18, N. Y. Monthly. Arranged in subject groups. Annual author and subject indexes (both alphabetical and amply cross-referenced). Annual Index for v. 4, 1951 gives list of publications reviewed (with abbreviations). Annual Index for v. 6, 1953 carries supplementary list. **DWB, DLC**—Now in its eighth year, this monthly periodical has proven one of the best sources of critical abstracts in many fields of interest to the technical or theoretical meteorologist. Of special interest are the 200 or more reviews each year on acoustics, turbulence, soil mechanics, dynamic meteorology, oceanography and geophysics. Each review is written by an authority on the particular subject, regardless of nationality. In each issue since Jan. 1951 there has been a short summary of advances in a special field of applied mechanics such as turbulence (Feb.) and rheology (April), each prepared by an outstanding authority and containing, in addition to a systematic survey of the basic research in that field, short subject indexes to articles previously reviewed in the journal (by number only) and a few additional bibliographic references. Applied Mechanics Reviews is edited by MARTIN GOLAND with T. VON KARMAN and S. TIMOSHENKO as editorial advisors and is sponsored by an impressive list of American scientific and engineering associations. A list of reviewers and a list of other abstracting services was published in the Dec. 1948 issue. (*Same item as* 2.6–4, June, 1951, *MAB.*) *Subject Headings:* **1. Applied mechanics reviews 2. Bibliography on meteorology 3. Periodical lists 4. Abstracting periodicals. I. American Society of Mechanical Engineers.**—*M.R.*

6A–13 551.5(98):016(048.8)

†Arctic Institute of North America, **Arctic bibliography.** Prepared for and in cooperation with the Department of Defense, under the direction of the Arctic Instititue of North America. (Marie Tremaine, ed.) Wash., D. C., Govt. Print. Office, **1953, 1954, 1955.** 5 v. (v. 1–3, 4478 p; v. 4, 1591 p; v. 5, 1268 p.) Index map (fold.) in back of each vol. Price: v. 1–3, $12.75 the set; v. 4, $5.50; v. 5, $4.75. **DLC**—Volumes 1 and 2 contain 4478 references, each with a descriptive abstract, and Vol. 3 thorough subject and geographic place indexes with over 100,000 references and cross references under 18,000 headings (by area under subject and by subject under area). A list of 1300 serials is appended. About 15–20% of the material is of interest to meteorologists and climatologists, and is indexed under such headings as auroras, climatic changes, clouds, cyclones and anticyclones, evaporation, fog, frost, humidity, ionosphere, microclimate, oceanography, precipitation, snow, solar radiation, upper air winds and wind, as well as under the specific geographic area or place involved. Vol. 4 contains 7700 references; v. 5 brings the bibliography up to date with 5500 references. (*Same item as* 4.11–1, Nov. 1953; 5A–243, Jan. 1954; 5I–226, Sept. 1954, *MAB.*) *Subject Headings:* **1. Arctic bibliographies 2. Subject bibliographies 3. Bibliography on the Arctic 4. Annotated bibliographies 5. Arctic. I. Tremaine, Marie** (*ed.*) **II. U. S. Dept. of Defense.**—*M.R.*

6A–14 551.46(05):016

Bibliographia Oceanographica, v. 1, **1928–** Latest issue seen, v. 20, 1947. Pub. 1929–1952. Issued by Italy. Consiglio Nazionale delle Ricerche. Comitato Nazionale per la Geologia, Geografia e Talassografia. Founded by Johannes Magrini. Editor, Gustavo Brunino. **DLC**—A fairly comprehensive, partially annctated (in Italian) bibliography of modern works on all phases of oceanography prepared under the direction of the Italian delegation of the International Commission for the Scientific Exploration of the Mediterranean. (*Same item as* 5A–237, Jan. 1954, *MAB.*) *Subject Headings:* **1. Oceanography bibliographies 2. Bibliography on oceanography. I. Magrini, Johanes** (*founder*) **II. Brunino, Gustavo** (*ed.*) **III. Italy. Consiglio Nazionale delle Ricerche. Comitato Nazionale per la Geologia, Geografia e Talassografia.**—*M.R.*

6A–15 91(058):016

†Bibliographie Géographique Internationale, Paris, v. 1, **1891–** Latest issue seen, v. 59, 1949–1950. Annual. Issued by the Association de Géographes Français. Pub. under the auspices of the Union Géographique Internationale, from funds of the UNESCO, and from the Federation des Sociétés Françaises de Sciences Naturelles, with the collaboration of geographical societies of various countries. Editor, Elicio Colin. title varies: Bibliographie de l'Année (when it was included in the *Annales de Geographie* in its early years). Arranged by subject divisions and under geographic areas. Annual

author index and Classed subject index. **DLC.** Also: Caraci, Giuseppe, **La "Bibliographie Géographique Internationale," oggi e domani.** [The "Bibliographie Géographique Internationale," today and tomorrow.] *Società Geografica Italiana, Rome, Bollettino,* Ser. 8, 5(3/4):317–330, May/Aug. 1952. In Italian, English summary, p. 330. **DWB**—In most volumes of the **Bibliographie** there is a section entitled "Météorologie, Climatologie," followed by one on "Hydrographie," and one on "Oceanographie" containing 50 to 100 abstracts of articles from diverse sources. Some abstracts are very comprehensive, comprising a page or two of fine print, others are very brief. In the section with regional headings will also be found articles on local climatology. For instance, most of the material under Arctic and Antarctic Regions is of climatological or oceanographic interest, and similar material is found under Switzerland, Poland, Austria, U.S.S.R., India, etc. Contents of geographical journals or compendiums are analyzed in full under the country of publication. In some volumes the material under each region is arranged by subject. CARACI criticizes the 58th vol. emphasizing the inadequate coverage of the literature on the Arctic, and inaccurate arrangements and subdivisions. Author proposes to transfer the project to UNESCO, establishing a Geographical Library and publishing a true international bibliography. *Subject Headings:* **1. Meteorology bibliographies 2. Geography bibliographies I. Association de Géographes Français.**—*M. R., A.A.*

6A–16 551.5:016(05)(048.8)

†Bibliography of Technical Reports, Wash., D. C., v. 1, no. 1, Jan. 11, **1946–** Latest issue seen, 22(4) Oct. 1954. Issued by U. S. Department of Commerce, Office of Technical Services. Weekly, Jan. 1946–June 1948; monthly, July 1948–. Title has varied. Indexes v. 1–10, 1946-1948, in 1 vol. **DLC**—Each issue of this monthly bibliography contains a section (a page or two) entitled "Meteorology and Climatology" containing half a dozen or more abstracts of contract reports on geophysical subjects. Some interesting items appear in the section on Aerodynamics. The price of the report, of a microfilm or photostat copy thereof and the "PB" order number are included and subject headings are added to each entry. All "PB" documents (150,000 of them) are available for inspection at the Library of Congress. (*Same item as* 4.9–13, Sept. 1953, *MAB.*) *Subject Headings:* **1. Technical reports 2. Meteorology bibliographies 3. Abstracting periodicals.**—*M.R.*

6A–17 57(05):016(048.8)

†Biological Abstracts, Philadelphia, v. 1, no. 1, Dec. **1926–** Latest issue seen, 28(11), Nov. 1954. Currently monthly; semi-monthly in Dec. Pub. by the Union of American Biological Societies, and by various biological journals. Edited at Pennsylvania Univ. by G. Miles Conrad. Price: $50.00 per vol. incl. annual indexes, from 3815 Walnut St., Phila., Pa. Arranged in subject groups. Author index in each issue. Annual indexes (irreg.) **DLC**—A section entitled Bioclimatology, Biometeorology, containing a few informative abstracts and a few more cross-references to articles in other sections (such as forestry, medical or animal bioclimatology, entomology, etc.) appears in each issue as the first part of the Ecology section of Section A (Abstracts of General Biology). Indexes are specific and complete by subject and region or place. *Subject Headings:* **1. Biology abstracts 2. Ecology abstracts 3. Bioclimatology abstracts 4. Abstracting periodicals.**—*M.R.*

6A–18 550.3(05):016(048.8)

†Canadian Geophysical Bulletin, Ottawa, v. 1, no. 1, Jan. 1/March 31, **1947–** Latest issue seen, v. 6, Dec. 1953. Pub. by Associate Committee on Geodesy and Geophysics, National Research Council of Canada. Vol. 1–4 pub. quarterly. vol. 5– pub. annually. Ed. varies with each volume. "Contains news of current work . . . and a bibliography of recent publications on Canadian work." Mimeo. **DGL, DWB, NRL**—This publication contains occasional articles or reports of interest to those working in geophysics (in the broader sense), and bibliographies on all or several branches of geophysics. Of interest to meteorologists are the sections on meteorology, hydrology, oceanography, terrestrial magnetism and atmospheric ionization, containing 50 or 100 abstracts of important Canadian papers in these branches of earth science. One issue (v. 4, no. 2), contained 139 unannotated references to papers on (1) atmospheric electricity, (2) aurora, (3) ionospheric ionization and (4) meteoric ionization, respectively. *Subject Headings:* **1. Geophysics bibliographies 2. Meteorology bibliographies 3. Geophysics abstracts 4. Canada. I. National Research Council of Canada. Associate Committee on Geodesy and Geophysics.**—*M.R.*

6A–19 54(05)(048.8)

†Chemical Abstracts, Columbus, Ohio, v. 1, no. 1, Jan. **1907–** Latest issue seen, 48(19), Oct. 10, 1954. Pub. by the American Chemical Society. Editor, 1954, E. J. Crane. (Editorial Office, Ohio State Univ.) Semi-monthly. Author index in each issue; annual indexes in Dec. issue; cumulative indexes every 10 volumes. Abstracts arranged in 31 subject groups. "List of 5,236 periodicals, with key to 283 library files issued as Pt. 2, Dec. 25, 1951." **DLC**—Of all major ab-

stracting periodicals, this well known series is the most comprehensive and complete, and the indexing the most thorough. It contains more references to meteorological literature than any other general abstracting series except **Physics Abstracts.** For current literature one must look in the annual subject indexes under specific chemical compounds such as CO_2 in air, in soil, etc., or under Ozone, N_1 or whatever constituent of atmosphere or precipitation, etc., one wishes to find material. General subjects, such as atmosphere pollution, are also found indexed. The decennial indexes provide a quick source of many references on many very specific subject of interest to chemists and meteorologists. *Subject Headings:* **1. Chemical abstracts 2. Abstracting periodicals 3. Bibliography on chemical meteorology. I. American Chemical Society.**—*M.R.*

6A–20 551.5:62:016

†**Engineering Index, 1906**- Latest issue seen, 1953. N. Y., London, Engineering Magazine. Annual. Issued by American Society of Mechanical Engineers, 1918– Title varies: 1906–1918, as Engineering Index Annual (compiled from the Engineering Index, published monthly in the Engineering Magazine, 1906–1916, in Industrial Management, 1917–1919), 1919– as Engineering Index. Arranged alphabetically by subject headings. Annotated. (Continuation of the index begun by J. B. Johnson. The 1892 issue covers 1884–1891. The 4th volume covers 1901–1905.) **DLC**—Each annual volume contains a 19 page alphabetical list of technical publications analyzed. Perhaps 200 meteorological items a year of interest to engineers or hydrologists are listed (with brief but informative abstracts), under the headings meteorology, air pollution, aviation meteorology, cosmic rays, humidity, hurricanes, hydrology, ionosphere, solar radiation, rain and rainfall, etc. One may subscribe to cards on any of a score of major subject areas, which are received at a rate of about 5 or 6 a week for meteorology, hydrology and oceanography. *Subject Headings:* **1. Engineering meteorology bibliographies 2. Technical periodical lists. I. American Society of Mechanical Engineers.**—*M.R.*

6A–21 55:016

†**Fortschritte der Physik: Halbmonatliches Literaturverzeichniss,** Brunswick, v. 1–18, **1902–1918.** No more published. Semi-monthly. Issued by the Deutsche Physikalische Gesellschaft, Berlin. Editors: Karl Scheel and Richard Assmann (Prof. Süring last year). United in 1920 with its parent magazine, *Fortschritte der Physik*, v. 1–74, 1845–1918 and with the *Annalen der Physik, Beiblätter* (1877–1919) to form *Physikalische Berichte*, Berlin, v. 1, 1920– **DLC**—Authors and titles of articles on physics, astrophysics and meteorology, found in over 300 scientific periodicals (and other sources), are cited and classified by subject. About 60–100 meteorological items appear in each issue, giving an annual total of about 2000 references. Arranged in about 17 subject categories. During the last few years (First World War) the number dropped off to around 1000–1200 a year. Dr. Assmann and Prof. Süring saw to it that meteorology (and geophysics) was well represented. No abstracts are included. A list of periodicals appears in the 1902 volume. *Subject Headings:* **1. Physics bibliographies 2. Subject bibliographies 3. Meteorology bibliographies 4. Periodical bibliographies. I. Deutsche Physikalische Gesellschaft, Berlin II. Annalen der Physik III. Physikalische Berichte.**—*M.R.*

6A–22 551.5(05)(048.8)

†France. Centre National de la Recherche Scientifique, **Bulletin Analytique, Pte. 1, Mathématiques, astronomie, physique, chemie, sciences de l'ingénieur, sciences de la terre.** [Analytical bulletin, Pt. 1, Mathematics, astronomy, physics, chemistry, engineering sciences, sciences of the earth.] v. 1, 1940– Latest issue seen, 15(9), 1954. Monthly. Editors, 1954, R. Duval, A. Berthelot, J. Roger. Price: 6.000 fr. foreign. Edited at the Centre, 16 rue Pierre Curie, Paris. Indexing irregular (sometimes subject, sometimes author). Contents of Pt. 1 included in the general **Bulletin Analytique** through v. 1–2, 1940–1941; with v. 3, Bulletin issued in 2 parts, later in 3. **DWB, DLC**—This voluminous annotated bibliography contains in each issue a section on Physics of the Earth, of which Sec. IV. Oceanography, Sec. V. Hydrography, Sec. VI. Atmospheric Physics, Sec. VII. Meteorology, Sec. VIII. Upper Atmosphere and Sec. IX. Terrestrial Magnetism are of interest to meteorologists. In one issue these sections comprise about 14 pages and 200 entries. (*Same item as* 4.5–19, May 1953 and 5C–239, March 1954, *MAB.*) *Subject Headings:* **1. Periodical bibliographies 2. Annotated bibliographies 3. Geophysics.**—*M.R.*

6A–23 551.5:016(05)

†**Geographisches Jahrbuch,** Gotha, v. 1, 1866– Latest issue seen, 61(1), 1954. Annual; irreg. v. 1–9, biennial; v. 10– usually in 2 parts. Editor, Dr. Hermann Haack. Pub. currently by VEB Geographisch-Kartographische Anstalt, Gotha, Justus-Perthes-Strasse 3–9, Gotha. **DLC**—This publication contains reviews of the literature in the field of geography and related subjects arranged by geographic area and/or by subject. V. 40, 1924/25 contains (p. IX–XIX) a systematic cumulative index to the first 40 volumes (1866–1925) of **Geographische Jahrbuch.** V. 58(2):252–

478, 1943/47 and v. 59(1):4–217, 1948, KNOCH, KARL and BLÜTHGEN, J., **Klimatologie und Meteorologie, 1929–1938,** contain an excellent bibliography and report on progress in at least 200 separate branches of meteorology and climatology, e.g., radiation, air temperature, atmospheric circulation (general and local), water vapor, hydrometeors and climatic changes. No regional climatological breakdowns appear in these two issues, but other issues are rich in references to the climate of particular places (*see* 3.7–11, July 1952, *MAB*). V. 60, 1950, 320 p. BREITFUSS, LEONID, **Erforschung der Polargebiete,** contains hundreds of references to the climatology or meteorology of the Arctic and Antarctic arranged systematically by region (see 4.4–21, April 1953, *MAB*). V. 60(1), 1954, 186 p. REINER, ERNST, **Vorderindien, Ceylon, Tibet, Nepal, 1926–1953,** contains 67 references (p. 76–81) to literature on climatology of the Middle East with a 2 page running commentary on each item. Hydrology, rainfall and oceanography are treated in a similar manner (p. 73–75). (*Same item as* 5I–166, Sept. 1954, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Meteorology bibliographies. I. Haack, Herman** (*ed.*).—*M.L.R., M.R.*

6A–24 55(05)(048.8)

†**Geological Abstracts,** N. Y. Vol. 1, No. 1/2, March/June **1953.** Latest issue received, 2(3), March 1954. Published by the Geological Society of America. At head of cover-title: American Geological Institute (which issued Vol. 1, Nos. 1–4, 1953) Quarterly. Price: $2.00 per vol. of 4 issues. Arranged according to journal. Alphabetical author index. Vol. 1, Nos. 1–4, arranged by author, with subject index. **DWB, DLC**—This new quarterly abstracting periodical fills a long-felt need for abstracts of articles in the earth sciences. The first three issues (No. 1/2 and 3 of vol. 1, 1953) contain about 130 abstracts per issue, on large pages with 2 or 3 abstracts per page (some abstracts fill 2 or 3 pages). The abstracts are taken as is from the 18 periodicals which contribute (one being the *American Geophysical Union, Transactions*). The title of the journal is cut out and is laid out on the pages and reproduced photographically. The subject index lists authors and titles under a dozen major subject fields. About 20 articles in each issue would be of interest to meteorologists, climatologists or hydrologists. *Subject Headings:* **1. Geophysics abstracts 2. Abstracting periodicals. I. American Geological Institute II. Geological Society of America.**—*M.R.*

6A–25 55(048.8)

†**Geophysical Digest,** Calcutta. Issued quarterly by the Secretary, Central Board of Geophysics, Calcutta. First issue received, v. 1, no. 1, Jan. **1953**– Latest issue seen, 1(4), Oct. 1953. Mimeo. **DWB**—A survey of current work in geophysics is given in a general section and a section for each of 10 specific fields such as meteorology, hydrology, oceanography, seismology, atmospheric ionization, etc. Each section gives (a) accounts of meetings and symposia (Indian and international) held in India and (b) abstracts of papers pertaining to India or Indian authors. A list of accessions of the Indian Central Board of Geophysics Library (Calcutta) is added. *Subject Headings:* **1. Geophysics abstracts 2. Reviews 3. Meteorology abstracts 4. India. I. India. Central Board of Geophysics.**—*G.T.*

6A–26 551.5:62:016

Industrial Arts Index, New York, **1913**– Latest issue seen, 42(12), Nov. 1954. Subtitle: Subject index to a selected list of engineering, trade and business periodicals, books and pamphlets, with a list of important technical societies. Issued by H. W. Wilson, New York City. 1913–1917, 5 nos. a year, with annual cumulation. 1918 - 10 nos. a year, with annual cumulation in the even years and a 2-year cumulation in the odd years, other cumulations during each year. **DLC**—A few items gleaned from about 300 of the more common American scientific and technical and trade journals are indexed monthly and in the annual cumulative index under the headings Meteorology, Meteorological Instruments, Meteorological Research, Climate, Floods, Hurricanes, Lightning, Radar, Rain and Rainfall, Snow, Solar Radiation, Weather Forecasting, Winds or under specific instruments, e.g., Altimeters, Barometers, Hygrometers, Thermometers, and a few other related headings. Perhaps 30–50 items of interest to meteorologists (with emphasis on industrial or engineering aspects) appear in each year's indexes. No author index is published. *Subject Headings:* **1. Periodical indexes 2. Industrial meteorology bibliographies.**—*M.R.*

6A–27 551.5:06:016

†International Union of Geodesy and Geophysics. Association of Meteorology. **Proces-verbaux des séances, May 1922–** (Proceedings of the meeting, May 1922–) Latest issue seen, Aug. 1951, pub. Dec. 1953. Issued a year or two after the meeting. Title varies: Proces-Verbaux—memoires et discussions. Issued by the Association as one of its numbered Publications. **DWB**—In each series of publications or Transactions that appeared from 1 to 10 years after the general meetings (Rome 1922, Madrid 1924, Prague 1927, Stockholm 1930, Lisbon 1933, Edinburgh 1936, Washington 1939, Oslo 1948, Brussels 1951 and Rome 1954) there are a score or more of national reports of activities in meteorology (also in hydrology, oceanography, terrestrial magnetism, etc.

in the reports of the respective association) usually accompanied by an extensive bibliography of works published during the period since the previous meeting. Some reports are quite sketchy and some voluminous with carefully compiled bibliographies. Whereas this series is difficult to locate or obtain in whole or even in part, it represents a unique source of subject material by country of production. Some of these reports are abstracted separately (*see* 6A–79, 6A–81 and 6A–101). (The Rapports Nationaux (National Reports) which were sometimes included in the Proces-verbaux, or issued separately as numbered Publication of the Association, were issued for 1954 meeting in the *I.U.G.G. Bulletin d'Information*, v. 3, no. 6, July 1954?) *Subject Headings:* **1. National bibliographies 2. Serial bibliographies.**—*M.R.*

6A–28 551.5:016

†London. Science Museum. Science Library, **Bibliographical Series,** no. 1, 1931– Latest issue seen, no. 729, 1954. Irreg. Mimeo. **DLC.** Also its **List of Science Library Bibliographical Series,** issued from time to time, in numerical order as issued. Also its **Classified List of Bibliographies in the Science Library Bibliographical Series,** Nov. 1946. 37 p. In UDC order. **GB-MO**—These unannotated special subject bibliographies are produced by laying out in chronological order and photographing all of the cards in the Science Museum Library files on the special subject, as found under the U.D.C. reference to that subject. About a score of bibliographies on meteorological subjects are included, thus far, in the list of over 700 subjects covered. For instance, one on the aurora contains 879 refs.; one on lightning, 357 refs.; on visibility, 100 refs.; on contrails, 15 refs. and on Paleoclimates, 178 refs. Do not confuse with its **SCIBIB, Science Bibliography Series,** 1948?– Latest issue seen, no. 401, 1953. **GB-MO.** *Subject Headings:* **1. Subject bibliographies 2. Meteorology bibliographies 3. U.D.C. bibliographies.**—*M.L.R.*

6A–29 5:016:551.5:05

†Mexico City. Centro de Documentación Científica y Técnica, **Boletín,** v. 1, No. 1, Jan. 1952– Latest issue seen, v. 4, No. 3, March 1954. Monthly. Editor, Dr. F. Priego. Price: foreign, $6.00 U.S. per vol. **DLC**—This new monthly bibliographic series fills a great need for prompt and comprehensive coverage of the world's scientific and technical literature for the benefit of Spanish speaking countries of Latin America in a manner similar to the **Bulletin Analytic** of the French Centre National de la Recherche Scientifique. However, it is useful in other countries of the Western Hemisphere as the original language title always follows the Spanish translation of the title, and the journal citations are in the original language. The main meteorological journals are covered with a surprisingly short time lapse. The general arrangement is by subject, classified into 10 major and 100 subsections. Section C 3 entitled Geofisica and C 4 Meteorología y Física de la Atmósfera usually contain 100 to 150 references, some with brief annotations. Also in section J 2 are items on Agricultural Meteorology. (*Same item as* 5.5–10, May 1954, *MAB.*) *Subject Headings:* **1. Periodical bibliographies 2. Bibliography on meteorology 3. Mexico.**—*M.R.*

6A–30 55(05)(048.8)

†**Physics Abstracts,** London, v. 1, **1898–** Latest issue seen, 58(685), Jan. 1955. Edited and issued by the Institution of Electrical Engineers in association with the Physical Society of London, the American Physical Society and the American Institute of Electrical Engineers. Monthly. Title varies. Monthly author index. Annual author and subject indexes and collected list of subject headings. Abstracts in U.D.C. order. Jan. 1953 issue includes List of Journals, with full titles and addresses, referred to in the Science Abstracts. 1953 Annual Index includes a supplementary list to the aforementioned list; also a list of journals abstracted regularly; abstracting journals from which signed abstracts are reproduced; also section of "Changes of Title" and "Changes of Address." Contents of Physics Abstracts were included in Science Abstracts, London, v. 1–5, 1898–1902; with v. 6, 1903– appeared in **Science Abstracts, Section A, Physics Abstracts,** the above title. **DLC**—The material presented in **Physics Abstracts** is arranged according to the U.D.C. for Astronomy and Astrophysics (52), Physics (53), Physical Chemistry (541), Crystallography (548) and Geophysics (55). In the section on Geophysics there are usually 10 or more abstracts of meteorological interest, and 30 or 40 more on peripheral fields under astrophysics, cosmic rays, spectroscopy, turbulence, optics, etc. Thus out of 8–10,000 abstracts published each year in Physics Abstracts, about 600 would be of interest to meteorologists. The abstracts are written by technically qualified experts, and cover very specialized aspects of meteorology such as auroral or ionospheric physics or chemistry, atmospheric tides or high level winds, visibility, atmospheric turbulence, acoustics and meteor dust. The annual indexes, very thorough and prompt in appearing, include lists of periodicals abstracted, subject indexes with condensed titles, and "systematic" lists of subjects covered. (*Same item as* 5C–254, March 1954, *MAB.*) *Subject Headings:* **1. Physics abstracts 2. Meteorology abstracts 3. Abstracting periodicals. I. Institution of Electrical Engineers, London II. Physical Society of London III. American Physical Society IV. American Institute of Electrical Engineers.**—*M.R.*

6A–31 55(05)(048.8)

†**Referativnyĭ Zhurnal,** No. 1, Jan. 1954– Latest issue seen, No. 10, Oct. 1954. Monthly. Issued by the Akademiia Nauk SSSR. Institut Nauchnoĭ Informatsii, Moscow. Editor, E. V. Shpolskiĭ. Price: 20 rubles. **DLC** (Slavic)—About 100–150 abstracts are published each month in the section Fizika atmosfery (Physics of the atmosphere), with subdivision General, Textbooks, Instruments and Methods, Applied Meteorology, Dynamic Meteorology, Disturbances, Radiation and Temperature, Thermodynamics, Turbulence, Synoptic Meteorology, Climatology, Water Vapor, Clouds and Fog, Radio Meteorology, Atmospheric Optics, Visibility, Airglow and Aurora, Atmospheric Electricity, Upper Atmosphere-Ionosphere and Solar Influences. Abstracts are numbered consecutively from Jan.–Dec. issue, about 15,000 a year in the Physics section (1500 on Meteorology). Standard meteorological journals from various countries and miscellaneous books and monographs are reviewed—some very extensively and some with no annotations. Original titles are given in brackets (even in Japanese or Chinese). *Subject Headings:* **1. Physics abstracts 2. Meteorology abstracts 3. Abstracting periodicals 4. Russian language. I. Akademiia Nauk SSSR.**—*M.R.*

6A–32 55(05)(048.8)

†**Title Announcement Bulletin,** Dayton, Ohio, No. U-1, March 13, 1953– Latest issue seen, No. U-62, Nov. 5, 1954. Issued by the U. S. Armed Services Technical Information Agency (ASTIA). Weekly. **DLC.** This publication (TAB for short) is a successor to the **Technical Information Pilot (TIP),** issued by U. S. Library of Congress. Technical Information Division, for the U. S. Office of Naval Research, under Contract NAonr 13-47. Monthly. It was issued from June 15, 1945 through June 2, 1953. No more issued. Latest Cumulative Index, Jan.–Dec. 1951 was issued in 1954. 486 p. Alphabetical subject order. **DLC**—Many of the items abstracted during the years 1945–54 are on meteorology, upper atmosphere, auroras and many other pertinent subjects. Annual indexes, lists of subject headings and printed cards (side margin) are valuable adjuncts to this series. Actual loan of documents or microcards of same are additional services of the Technical Information Division of the Library of Congress. All of the material abstracted and indexed is of the Contract Report type (Air Force, ONR, Signal Corps, Quartermaster Corps and other U. S. Government agencies), and the reports and services are available only to U. S. Government Defense agencies and their contractors. Thus far about 100,000 items on 10,000 subjects have been abstracted and indexed, but 35,000 items printed since TAB began in March 1953 are published by title only, the abstracts appearing only in the card form. *Subject Headings:* **1. Abstracting periodicals 2. Meteorology abstracts. I. U. S. Armed Services Technical Information Agency II. U. S. Library of Congress. Technical Information Div. III. Contract NAonr 13-47 IV. Technical Information Pilot, Wash., D. C.**—*M.R.*

6A–33 551.5:61:016

†U. S. Armed Forces. Medical Library, **Current List of Medical Literature,** v. 1, Jan. 1941– Latest issue seen, 26(4), Oct. 1954. 2 v. per year. Monthly. In two sections (Sec. 1, items by journal or serial indexed. Sec. 2, Subject index.) Biannual author and subject indexes in June and December. Supersedes its **Recent Book Acquisitions,** v. 1–3(1), April 1938–April 1940. **DLC**—Each monthly issue contains 3 parts: 1, a listing of articles in the various medical journals (which are arranged alphabetically by title of journal); 2, a subject index, and 3, an author index. The major headings of interest are Climate, Humidity, Meteorology, Cold, Altitude, etc. Several hundred pertinent articles are listed and indexed each year. Two other titles of perhaps more permanent value are: 1) U. S. Armed Forces. Medical Library, **Index Catalogue of the Library of the Surgeon's General's Office,** Ser. 1, v. 1–16, 1880–1895; Ser. 4, v. 1, 1936– Latest issue seen, v. 11 (M-Mez), 1948, and 2) **Index Medicus: a classified record of the current medical literature of the world,** v. 1–21, 1879–1899; Ser. 3, v. 1–6(5), 1921–June 1927, pub. by Carnegie Institution, Wash., D. C., 1879–1927. *Subject Headings:* **1. Periodical indexes 2. Medical meteorology bibliographies.** —*M.R.*

6A–34 551.5:63:016

†U. S. Dept. of Agriculture. Library, **Bibliography of Agriculture,** v. 1, No. 1, Jan. 1943– Latest issue seen, 18(12), Dec. 1954. Monthly. Price: $8.00 in U. S.; $9.50, foreign, from Govt. Print. Off., Wash., D. C. Classed arrangement by subject headings, then alphabetically by author. Author index in each issue. Annual subject index comprises the December issue. **DWB, DLC**—In each issue, under Meteorology in the major section "Miscellaneous," are listed articles from foreign agricultural journals and those in the U.S.D.A. and State Agricultural Experiment Station and Extension Services on meteorology and climatology, especially as pertaining to agriculture. About 20 or 25 items appear in each issue. Unannotated. Contains a surprising number of items from unusual foreign publications. In the annual subject index the majority of pertinent items are listed under climate and weather with sub-headings for countries and relation to other agricultural

subjects (such as plants, forests, insects, etc.). *Subject Headings:* **1. Agricultural meteorology bibliographies 2. Bibliography on agricultural meteorology.**—*M.R.*

6A–35 551.5:63:016

†U. S. Office of Experiment Stations, **Experiment Station Record,** v. 1, No. 1, **1889–** Latest issue seen, 95(5), Nov. **1946.** Annual Author Index and Subject Index. Cumulative indexes cover v. 1 through v. 80, 1939; from v. 51, 1924 on in ten volume cumulations. **DLC**—Contains a section entitled Agricultural Meteorology with 2 or more pages of abstracts of textbooks and articles which are of interest to agricultural research workers dealing with problems of weather. Most of the items are from American (especially state) publications, but a number of foreign articles are also abstracted. Subject indexing is very thorough. *Subject Headings:* **1. Abstracting periodicals 2. Agricultural meteorology bibliographies 3. Bibliography on agricultural meteorology.**—*M.R.*

6A–36 551.525.5:016

†U. S. Snow, Ice and Permafrost Research Establishment. **Annotated bibliography on snow, ice and permafrost,** [v. 1], Sept. 1951– Latest vol. seen, v. 7, Jan. 1955. Its *SIPRE Report,* No. 12, Vol. 1– Semiannual since v. 3, Jan. 1953. **DLC**—During the past four years the SIPRE project has searched, cataloged and abstracted 10,000 items on 1500 separate subjects in 17 languages, and published them not only in card form (3″×5″ with side margin index guides) but in 7 volumes with author and subject index, and in addition has issued cumulative author and subject indexes separately. About ¼ of the material is of meteorological interest, though most deal with ground conditions rather than hydrometeors in the atmosphere, even though frozen. About 25% of the items are from German and 20% from Russian sources. The bibliography attempts to exhaust all library resources in Washington, D. C. for material on snow, ice and frozen ground, although 90% of the material thus far has come from the Library of Congress. While engineering aspects are of primary concern, the theoretical articles are given high priority and are well annotated by qualified scientists. Current and past material are not segregated—the items appearing in the order they are found or processed, although the first four volumes were devoted to the more recent literature (since 1930). (*Same item as* 3,9–14, Oct. 1952; 4.11–13, Nov. 1953 and 5I–233, Sept. 1954, *MAB.*) *Subject Headings:* **1. Snow, ice and permafrost bibliographies 2. Bibliography on snow ice and permafrost 3. Annotated bibliographies.**—*M.R.*

6A–37 551.5(05):016

†**Wetter und Leben,** Vienna, v. 1, no. 1, April 1948– Latest issue seen 6(3/4), June 1954. Bimonthly. Sub-title: Zeitschrift für praktische Bioklimatologie. Issued by the Österreichische Gesellschaft für Meteorologie, and printed by them. Price: $4.25, DM 14, francs, 15. from the Gesellschaft at Hohe Warte 38, Vienna 19. Editors, Franz Sauberer, O. Eckel, M. Kaiser and others. **DWB, DLC**—Special sections, "Buchbesprechungen" (book reviews) and "Referate" (analytics from various journals and serials), latter arranged by subject groups such as (1) meteorology, climatology, geophysics; (2) bioclimatology; (3) medicine, hygiene, etc.; (4) animals and plants; (5) agriculture and forestry. From 20 to 50 articles or books are reviewed or abstracted in each issue. (*Same item as* 1–28, Jan. 1950, *MAB.*) *Subject Headings:* **1. Periodical bibliographies 2. Reviews of meteorological literature 3. Bioclimatology bibliographies. I. Österreichische Gesellschaft für Meteorologie.**—*M.R.*

6A–38 55(05)(648.8)

†**Zentralblatt für Geophysik, Meteorologie und Geodäsie,** Berlin, v. 1–11, **1937–1944.** No more published. Monthly (varying no. of issues per vol.). Editors, Karl Jung, Gerhard Fanselau, and others. Classed arrangement (subject heads). Abstracts in German, occasionally in English. Last no. in each vol. is author and subject indexes. This journal was a continuation of a special feature section entitled "Geophysik," previously contained in the **Zentralblatt für Mathematik und ihre Grenzgebiete. DLC**—Comprehensive abstracts of the most important scientific and technical literature in each field of pure and applied geophysics; geodesy and physical geology are presented in each issue. Items of interest to meteorologists will be found under sections on Terrestrial Magnetism, Aurora and Ionosphere, Atmospheric Electricity and Radioactivity; Oceanography; Hydrology and Glaciology; and Meteorology and Aerology. Some abstracts are over a page in length and constitute reviews on the works in question, others are mere annotations; in some cases no abstract at all is provided. A number of reviews of progress in specific fields are also presented. At least 4 or 5 thousand abstracts of meteorological interest are to be found in this series. Abstracts are written by experts in every country under editorship of Bartels, Bossolasco, Chapman, Defant, Von Ficker, Flemming, K. Knoch, Vening Meinesz, and L. Weickmann. (*Same item as* 4J–161, Oct. 1953, *MAB.*) *Subject Headings:* **1. Geophysics abstracts 2. Meteorology abstracts 3. Oceanography abstracts 4. Hydrology abstracts. I. Jung, Gerhard** (*ed.*).—*M.R.*

III. SCIENTIFIC PERIODICALS CONTAINING BIBLIOGRAPHIES

6A–39 016:05:5

†**World List of Scientific Periodicals Published in the Years 1900–1950,** N. Y. 3rd ed. William Allan Smith, Francis Lawrence Kent and George Burder Stratton (eds.). New York, Academic Press, Inc., 1952. 1058 p. Periodic International Congresses, p. 1042–1056. **DLC**—This useful list of about 50,000 scientific serials (natural sciences) published throughout the world from 1900–1950 contains titles of scores of meteorological journals or bulletins, besides the publications in related fields of science, with the accepted British standard abbreviation for each in addition to place of publication and the libraries (247) in the United Kingdom where the publication (or certain volumes of the publication) may be found. The previous edition of the "World List" came out in 1934, so this edition is especially valuable in that it lists all of the new publications started after World War II (including Meteorological Abstracts and Bibliography in 1950). The World List differs essentially from the American "Union List of Serials" in that all entries in the "World List" are strictly by running title, whereas the "Union List" tends to enter titles under the name of the organization if such forms part of the title. Slavic titles are entered in proper alphabetical order (as if transliterated into Roman alphabet) but are printed in the proper Cyrillic form as it appears in the journal. Abbreviations are accepted as standard throughout the British Empire and to some extent in other countries. The present (third) edition contains twice as many titles as the first which appeared in 1925. (*Same item as* 5.6–7, June 1954, *MAB.*) *Subject Headings:* **1. Scientific periodicals 2. Bibliography of scientific periodicals. I. Smith, William Allan II. Kent, Francis Lawrence III. Stratton, George Burder.**—*M.R.*

6A–40 (05)(083.8)

†**Union Catalogue of Learned Periodical Publications in South Asia,** Vol. 1, **Physical and Biological Sciences.** Compiled by S. R. Ranganathan and others. [Issued by the Indian Library Association.] London, G. Blunt, **1953.** 390 p. Price: Rs. 25. **DLC**—Catalog of serial holdings of 210 libraries in Burma, Ceylon, India, Indonesia and Malaya, classified according to U.D.C. system. Defunct periodicals are distinguished from current ones. There is an alphabetical subject index. Volumes 2 and 3 (forthcoming) will cover Humanities and Social Sciences, and Generalia and Cumulative Index, respectively. Also: Janardhanam, R., **Union catalog of learned periodicals.** *Current Science,* Bangalore, 23(4):116, April **1954.** Contains review of above mentioned title. *Subject Headings:* **1. Serial] publication lists 2. Southeast Asia. I. Indian Library Association.**—*M.R.*

6A–41 55(05):016

†American Geophysical Union, **Transactions,** v. 1, 1920– Latest issue seen, 35(4), Aug. **1954.** Pub. by the National Research Council of the Nat. Acad. of Sciences, Wash., D. C. Bi-monthly. **DWB, DLC. Index to Transactions,** years 1920–1944 inclusive. Wash., D. C. National Research Council, Nov. 1951. 144 p. Price: $4.00. **MH-BH** –Each issue contains unannotated listings of current accessions in the following general fields: General Geophysics, Geodesy, Terrestrial Magnetism and Electricity, Meteorology, Oceanography, Hydrology, Seismology, Volcanology, Geochemistry and Petrology, and Tectonophysics. About 50 or 60 items in each issue would be of interest to meteorologists. Entries in each sub-field are listed alphabetically by author. The author-subject index for 1920–44 provides a useful guide to contents of those volumes. *Subject Headings:* **1. Meteorology accession lists 2. Geophysics bibliographies 3. Periodical indexes 4. Author-subject indexes.**—*M.R.*

6A–42 551.5(05):016

†American Meteorological Society, **Bibliography [of current meteorological books and articles.]** Its *Bulletin,* 23(7):305–314, Sept. **1942.** A special feature continued in the following numbers: v. 23, Nov.–Dec. 1942; v. 24, Jan., April–June, Sept., Nov.–Dec. 1943; v. 25, Jan–June, Oct.–Nov., 1944; v. 26, Jan–June, Sept.–Dec. 1945; v. 27, Jan.–April, June, Oct.–Dec., 1946; v. 28, Feb., Sept., Nov.–Dec. 1947; v. 29, Jan.–April, Sept.–Dec. 1948. **DWB**—Between Nov. 1942 and Dec. 1948, 48 bibliographies consisting of 40 to 100 abstracts each, classified according to the U.D.C. system, were published as part of the *American Meteorological Society, Bulletin,* although not in every issue during that period. About 300 items were published, from many periodicals in many countries, but with preference given to those which had author's abstracts. This represented about 10% of the literature published during these years. No. 14–21 compiled by RALPH W. BURHOE and FRANCES A. WOLLASTON; no. 22–34 by BURHOE and CONRAD CHAPMAN; no. 35–38 by RALPH W. and FRANCES BURHOE; no. 39–48 by MALCOLM and MARIAN RIGBY. *Subject Headings:* **1. Meteorology bibliographies 2. Meteorology abstracts 3. Bibliography on meteorology.**—*M.R.*

6A–43 551.594.7(048.8) 551.594:016

†Institute of Radio Engineers, New York, **Proceedings of the I.R.E.** v. 1, 1913– Latest issue seen, 42(11), Nov. 1954. Monthly. Feature Section: Abstracts and References, arranged by Decimal Classification. Editor, 1954, John R. Pierce. Price: $2.25 per issue; $18.00 yearly. **DWB, DLC**—Reviews (abstracts) or articles in all fields of science and technology of interest to radio engineers, are arranged according to the U.D.C. under Geophysical and Extraterrestrial Phenomena (523 and 551.5). There are 20 or 25 items per month on cosmic rays, meteor and ionospheric reflection ionization, magnetic storms, ionospheric winds, atmospheric electricity, sferics and radar for weather observation, etc. *Subject Headings:* **1. Radio meteorology abstracts 2. Atmospheric electricity bibliographies 3. Ionospheric bibliographies 4. Bibliography on atmospheric electricity.**—*M.R.*

6A–44 551.5(05):016

†**Journal of Geophysical Research,** Wash., D. C., v. 1, **1896–** Latest issue seen, 59(2), June 1954. Quarterly. Price: $3.50 per year from editorial office, 5241 Broad Branch Road, N.W., Wash. 15, D. C. Editor, Merle A. Tuve. Subtitle: The Continuation of **Terrestrial Magnetism and Atmospheric Electricity.** Published under this title through v. 53, 1948. Regular feature: List of recent publications, alphabetical by author under subject groups. **DLC, DWB**—Subjects treated in recent issues (1949–54) are A—Terrestrial Magnetism, B –Terrestrial Electricity, C—Cosmic Rays, D—Upper Air Research, E—Earth's Crust and Interior, and F—Miscellaneous. About 150–200 items appear in each issue or from 700–800 a year. Articles on auroras and lightning appear in Sec. B, and on atmospherics, meteor observations and the ionosphere as applicable to meteorological research, appear in Sec. D. (*Same item as* 1–11, Jan. 1950 and 4J–235, Oct. 1953, *MAB.*) *Subject Headings:* **1. Periodicals with bibliographies 2. Upper atmosphere 3. Cosmic rays.**—*M.R.*

6A–45 551.5(05):016

†**La Météorologie,** Paris, New Series, no. 1, Jan. **1925–** Latest issue seen, Series 4, no. 34, April/June 1954. Quarterly. Issued by the Société Météorologique de France. It succeeds their **Annuaire** (1849–1924) and originally continued its numbering. Subtitle: Revue de Météorologie et de Physique du Globe. Annuaire de la Société Météorologique de France. Price: francs 2000 (3000 outside France), yearly, from the Société, 1 Quai Branly, Paris 7. **DWB, MH-BH**—Up to 1953 this periodical contained (in most issues) subject bibliographies arranged according to the U.D.C., with titles in original language and in French, and with fairly long and informative abstracts of 50 odd articles in the several major branches of 551.5 (meteorology). Abstracts are arranged in similar manner to those in the **Bibliographie Meteorologique Internationale,** except that they are printed on two sides of the page. (*Same item as* 1–17, Jan. 1950, *MAB.*) *Subject Headings:* **1. U.D.C. bibliographies 2. Meteorology abstracts I. Société Météorologique de France.**—*M.R.*

6A–46 551.5(05):016

†**Meteorologiia i Gidrologiia,** Moscow, No. 1, **1936–** Latest issue seen, No. 8, **1952.** Monthly (irreg.) 12 nos. yearly. Renumbers from one each year. Issued by the U.S.S.R. Glavnoe Upravlenie Gidrometeorologicheskoĭ Sluzhby. During 1951, **Meteorologiia i Gidrologiia** was substituted by the **Informatsionnyĭ Sbornik** of the Service, and resumed publication in 1952. It is a continuation of two other journals which lapsed in 1935. One, **Meteorologicheskiĭ Vestnik,** Leningrad (1891–1935//), which had been issued by the Russkoe Geograficheskoe Obshchestvo, and the other the **U.S.S.R. Tsentral'noe Upravlenie Edinoĭ Gidrometeorologicheskoĭ Sluzhby, Vestnik,** —1935// A special feature of the **Meteorologiia i Gidrologiia** is that entitled "Kritika i Bibliografiia" [Reviews and bibliography] which usually contains a section "Sovetskaia literatura po meteorologii i gidrologii" [Soviet literature on meteorology and hydrology], and an additional section "Inostrannaia literatura," [Foreign literature]. Sometimes in the place of these two sections a special subject bibliography is run, as in 6(10):123, 1940, **Ukazatel' literatury po voprosu o zasukhakh i sukhoveiakh.** [Bibliography of literature on droughts and dry winds.] **DWB, DLC**—In the course of the years when **Meteorologiia i Gidrologiia** and **Meteorologicheskii Vestnik** were published, thousands of references to native and foreign literature were included, some with long or short abstracts, but most with mere journal citation. The entries have often been grouped according to Books, Maps and Charts, Journal articles and for the "foreign" journals a listing of contents of each journal with translation of title into Russian. (*Same item as* 2.14, Feb. 1950, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. Periodicals with bibliographies. I. USSR. Glavnoe Upravlenie Gidrometeorologicheskoĭ Sluzhby.**—*M.R.*

6A–47 551.5(05)(048.8)

†**Meteorologische Rundschau,** Bad Kissingen, v. 1, no. 1, July/Aug. **1947–** Latest issue seen, 7(9/10), Sept./Oct. 1954. Bi-monthly. Issued by Meteorologische Gesellschaft, Bad Kissingen. Published by Springer-Verlag, Berlin. Editor, Karl Keil. Address: Reichshof, Postfach 10, Bad

Kissingen, Germany. Price: 60 DM yearly. **DWB, DLC, MH-BH**—Each issue of Meteorologische Rundschau contains a hundred or more abstracts, some quite extensive, by professional meteorologists at Bad Kissingen, arranged under 8 or 10 major headings (such as Radiation, Temperature, Climate, Visibility, Electricity, Dynamic Meteorology), plus references to several hundred other items which have been received by the German Weather Service Library at Bad Kissingen (arranged alphabetically by author or title). For a subject arrangement of this material (according to U.D.C.) see the *Zügange of Deutscher Wetterdienst* (no. 6A–66). (*Same item as* 1–18, Jan. 1950, *MAB.*) *Subject Headings:* **1. Meteorology abstracts 2. Meteorology accession lists. I. Keil, Karl** (*ed.*).—*M.R.*

6A–48 551.5(05):016

†**Meteorologische Zeitschrift,** Berlin, 1(1)-61(7), Jan. **1884**–July 1944. No more published. 1884, ed. by W. Köppen, 1944, by F. Steinhauser and R. Süring. Issued by the Deutsche Meteorologische Gesellschaft. In 1886 it absorbed the Zeitschrift of the Österreichische Gesellschaft für Meteorologie of Vienna, and the Meteorologische Zeitschrift was issued from v. 3, 1886– as a combined journal of the two societies. A regular feature article from the beginning generally found at end of each number, is that entitled "Bibliographie," in two sections, one listing contents of recent journals, the other analytics or monographs by author. **MH-BH, DWB, DLC**—The first volume (1884) contains about 600 abstracts or references, many written by W. Köppen, G. Hellmann, van Bebber and others. The policy of analyzing all the major meteorological periodicals and listing monographic works continued throughout the life of the **Meteorologische Zeitschrift,** although abstracts were not continued after 1900. (*Same item as* 2–8, Feb. 1950, *MAB.*) During the period 1934–43, the **Meteorologische Zeitschrift** issued a supplement **Bioklimatische Beiblätter** which contained reviews of bioclimatic literature. Also: **Zeitschrift für Meteorologie,** Berlin, 1(1), Oct. 1946– Latest issue seen, 8(9), Sept. 1954. Issued by Germany. Deutsche Demokratische Republik. Meteorologischer Dienst. Printed, Berlin, Akademie Verlag. Vol. 1–4, edited by H. Süring; v. 5– by W. König. irreg. 12 nos. per vol. Price: DM 48. yearly. **DLC, DWB**—Zeitschrift für Meteorologie, similar in format to Meteorologische Zeitschrift, was initiated under the editorship of Süring. Regular features in most issues: "Bibliographie" and "Zeitschriftenschau." [Bibliography and Contents of Current Journals.] *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. Meteorology abstracts. I. Koppen, W.** (*ed.*) **II. Süring, H.** (*ed.*).—*M.R.*

6A–49 551.5(05):016

†**Meteoros,** Buenos Aires, v. 1, no. 1, Jan. **1951**– Latest issue seen, 4(1/2), Jan./June **1954.** Quarterly; irreg. Sub-title: Revista trimestral de meteorología y geofísica del Servicio Meteorológico Nacional. Price: 4 pesos m/n. from Servicio Meteorológico Nacional, Paseo Colon 317, Buenos Aires, Argentina. Editor, Dr. Martin S. Cappelletti. figs., graphs, tables. English summaries. Regular feature: Reseñas Bibliográficas [Bibliographic reviews]. **DWB**—"Meteoros" is a scientific quarterly journal devoted to the publication of the geophysical and meteorological researches of the Argentine National Meteorological Service. It aims to present material on the theoretical and technical aspects of meteorology, geomagnetism, atmospheric electricity, etc. In addition to regular articles, the journal contains brief notes, a chronology of scientific activities in meteorology and fields relating to it in Argentina and in Latin America as a whole, and book reviews. (*Same item as* 3C–203, March 1952, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Periodicals with bibliographies. I. Argentina. Servicio Meteorológico Nacional.**—*I.L.D.*

6A–50 551.5(05):016

†**Monthly Weather Review,** Wash., D. C., v. 1, no. 1, Jan. **1872**– Latest issue seen, 82(7), July 1954. Issued by the U. S. Weather Bureau. Editor, James E. Caskey. Price: $3.50 (in U. S.) from Govt. Print. Off., Wash., D. C. **DWB**—A special section entitled "Bibliography" first appeared in the Jan. 1905 issue, and was a feature section in most issues until about Dec. 1938. It usually included two sections "Recent papers bearing on meteorology and seismology," consisting of titles of special interest from periodicals and serials received in the Weather Bureau Library, and "Recent additions to the Weather Bureau Library," which consisted of books, monographs, etc. In addition, special subject and regional bibliographies, were occasionally included, such as Zoch, Richmond T., **Brief list of works on meteorology,** which first appeared in 66(1):1–2, Jan. 1938. Also: Hand, I. F., **Bibliography of [his] scientific papers,** in 82(2):48–49, Feb. 1954. Also: Ward, Robert DeC., **Influence of weather on military operations,** in 47(2):85–85, Feb. 1919. (For review of this periodical, *see* 1–19, Jan. 1950, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology. I. U. S. Weather Bureau II. Caskey, James E.** (*ed.*).—*M.R.*

6A–51 91(05) 551.5:016

†**Petermanns Geographische Mitteilungen,** Gotha, v. 1, 1855– Latest issue seen, 98(3), 1954. Currently quarterly. Title has varied: **Mitteilungen aus Justus Perthes Geographischer Anstalt.** Editors, Hermann Haack and Ernst Neef. **DWB, DLC**—Special section entitled "Geographischer Literaturbericht," edited by W. HORN, consists of 2 sections, "Besprechungen" (Reviews) arranged by large geographic regions, numbered from 1 in each volume, and "Neuerscheinungen," a listing of newly published titles, including monographs, and contents of periodicals, under same arrangement. This is the best periodical source of regional climatological material. The coverage of the world's geographical literature has been exhaustive for nearly 100 years, and the important material has been thoroughly reviewed and indexed in annual and cumulative indexes. Scores of reviews of first rate material have been actually published in Petermanns Mitteilungen and its Beihefte, so that the cumulative indexes provide a bibliographic source for such literature as well as for references to literature reviewed. Recent issues have a section on Soviet geography which contains reviews and contents of Soviet geographic periodicals. *Subject Headings:* **1. Climatology bibliographies 2. Regional bibliographies 3. Periodical indexes. I. Haack, Hermann** (*ed.*) **II. Neef, Ernst** (*ed.*). —*M.R.*

6A–52 551.5(05):016

†**Rivista di Meteorologia Aeronautica,** Rome, v. 1, 1937– Latest issue seen 14(1), Jan./March 1954. Quarterly. Publication suspended from end of 1943 to beginning of 1948. Sub-title: Pubblicazione trimestrale a cura del Servizio Meteorologico d'Aeronautica. Editor, Raoul Bilancini. Price: L. 3000, per year, foreign. Has 2 sections of interest, Analisi e Riassunti di Pubblicazioni (Reviews and analysis of publications) and Pubblicazioni Ricevute (Publications received in the editorial office, excluding those included in the first feature section). **MH-BH, DLC**—Jan.–March 1954 issue contains 110 reviews in Italian (some 3 or 4 long columns of important papers or monographs appearing in various countries, arranged according to the main headings of the U.D.C., and several pages of other accessions, with titles listed under author's name, and a list of 35 different periodicals received. In the section devoted to reviews the original title is given followed by an Italian translation of the original title. In the accessions list only the original title is given. (*Same item as* 1–21, Jan. 1950, *MAB.*) *Subject Headings:* **1. Meteorology abstracts 2. Meteorology accession lists 3. Bibliographies in periodicals 4. Italy. I. Bilancini, Raoul** (*ed.*) **II. Italy. Servizio Meteorologica d'Aeronautica.**—*M.R.*

IV. CUMULATIVE INDEXES TO SINGLE PERIODICALS

6A–53 551.465:016

†Annalen der Hydrographie und Maritimen Meteorologie, Hamburg. **Inhalts-Verzeichnis der Jahrgänge 1921–1940.** [Index and contents of the Annalen der Hydrographie und Maritimen Meteorologie for the years 1921–1940.] Hamburg, Deutsche Seewarte, 1943. 163 p. **DWB**—Earlier indexes were issued for 1873–1888 (Berlin, 1889), 1889–1902 (Hamburg, 1903) and 1903–1920 (Hamburg, 1922). The present index comprises 112 pages of combined subject and author index, and a number of special indexes or listings of articles reviewed (14 pages by broad subject headings), Beihefte and other special monograph series and other types of publications issued by the Deutsche Seewarte. This constitutes a very useful series of bibliographies. The contents have also been put on cards by the U. S. Hydrographic Office (by subject). *Subject Headings:* **1. Periodical indexes 2. Subject bibliographies 3. Marine meteorology bibliographies.**—*M.R.*

6A–54 551.5:016(05)

†Dieterichs, Heinz, **Gesamtregister der Beiträge zur Physik der freien Atmosphäre, Bd. 1–28 mit Bei- und Sonderheften.** [Complete index to Beiträge zur Physik der freien Atmosphäre v. 1–28, including supplements and separate numbers.] *Germany. Deutsche Demokratische Republik. Meteorologischer Dienst, Veröffentlichungen,* No. 4, **1951.** 48 p. **DWB**—A cumulative author, title and subject index of the 28 volumes (and supplements) of this outstanding series published between 1904 and 1945. Nearly every important meteorologist who published during these years is represented in this index. The subject index is presented in two ways: 1) a dictionary-type list of about 600 subjects arranged alphabetically (in German) and 2) a classified subject index arranged by the 50 major headings of the U.D.C. system, with some subdivision. (*Same item as* 4.6–4, June 1953, *MAB.*) *Subject Headings:* **1. Periodical indexes 2. Meteorology bibliographies 3. Serial publications 4. U.D.C. catalogs. I. Beiträge zur Physik der freien Atmosphäre.**—*M.R.*

6A–55 551.5(058):01

†France. Bureau Central Météorologique, **Table générale par noms d'auteurs des mémoires contenus dans les tomes I et IV des Annales du Bureau . . . pour les vingt-trois premières années**

1878–1900. [and] **Table analytique générale. . . .** [Author and subject indexes to its Annales, Section I, Mémoires, and Section IV, Météorologie generale.] Its *Annales, Sec. I, Memoires*, 1900, following p. C-120. 26 p. **DLC**—Contains references to a large number of meteorological articles published in the "Annales" by ALFRED ANGOT (40), LEON TEISSERENC DE BORT (18), and many other French writers. There is also an extensive and well arranged classified subject index (analytical index). *Subject Headings:* **1. Bibliography on meteorology 2. Subject indexes 3. Author indexes 4. Periodical indexes.**—*M.R.*

6A–56 551.511:016

†Physical Review, **Index,** v. 17–80, **1921–1950.** Prepared under the direction of J. W. Buchta. Published for the American Physical Society . . . by the American Institute of Physics, N. Y., 1952. [2 v.] Separate author and subject indexes. A previous index, 1893–1920, pub. 1921, indexes v. 1–15, 1893–1912, and Series 2, v. 1 -16, 1913–1920. **DLC**—In the voluminous Subject Index (500 p.) the section on Geophysics covers 7 two-column pages (p. 196–202) and contains numbered subheadings entitled: (no. 167) Atmosphere—absorption spectra, aurora, night sky; (168) Atmosphere—composition; (169) Atmosphere—electrical phenomena; (170) Atmosphere—general; (171) Earth—age; (172) Earth—general; (173) Earth—magnetism; (174) Earth—radioactivity; over 400 references in all. Material of interest is also found under (57) Cosmic rays—atmospheric effects; (111) Lightning and (134) Electromagnetic propagation. In the Author Index (540 p.) hundreds of pertinent articles can be located by reference to works of such prolific writers as E. O. HULBERT, JOSEPH KAPLAN, O. R. WULF, ROSS GUNN, S. J. MAUCHLY and other outstanding physicists. All in all, this work and its predecessors constitute a very valuable contribution to the bibliography of the physics of the atmosphere, especially for those who do not read any language but English. (*Same item as* 5.1–7, Jan. 1954, *MAB.*) *Subject Headings:* **1. Bibliography on the physics of the atmosphere 2. Periodical indexes 3. Atmospheric physics bibliographies. I. American Physical Society II. American Institute of Physics III. Buchta, J. W.** (*ed.*).—*M.R.*

6A–57 551.5:016 550.3:016

†Revista de Geofísica. **Indice general de los años 1942 a 1952.** [Cumulative index for 1942–1952.] *Revista de Geofísica*, Madrid, 11(44):362–454, Oct./Dec. **1952. DWB**—Abstracts of papers published in volumes 1–11 (1942–1952) of Revista de Geofísica. The entries are arranged in 10 sections: gravimetry, seismology, prospecting, meteorology, magnetism, astronomy, radioactivity, geochronology, oceanography and miscellaneous. The section on meteorology contains abstracts of 72 papers. (*Same item as* 5.4–18, April 1954, *MAB.*) *Subject Headings:* **1. Meteorology abstracts 2. Geophysics abstracts 3. Meteorology bibliographies.**—*G.T.*

6A–58 551.5(05)

†Royal Meteorological Society, **Quarterly Journal Index,** [for] v. 27–51, **1901–1925.** London, Stanford, 1928. 70 p. **DWB.** v. 1–7 of the Quarterly Journal indexed in **Index to the Publications of the English Meteorological Societies,** 1839–1881. v. 8–26, 1882–1900, **Index,** pub. 1901. **DWB**—Author and subject index to titles with volume and paging. *Subject Headings:* **1. Periodical indexes 2. Subject indexes 3. Author indexes.**—*M.R.*

6A–59 551.46:016

†Spiess, H. C., **Sechzig Jahre "Aus dem Archiv der Deutschen Seewarte."** [Sixty years of "Aus dem Archiv der Deutschen Seewarte."] *Annalen der Hydrographie*, 65(10):467–479, Oct. **1937.** 264 refs. **DLC**—In a chronological list of 264 contributions from the Deutsche Seewarte (1878–1939), 113 deal with meteorology, 42 with oceanography, 35 with astronomy and navigation, 22 with magnetism and 12 with instruments. Alphabetical author index follows list of works. No subject index. (*Same item as* 5A–238, Jan. 1954, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Author indexes. I. Aus dem Archiv der Deutschen Seewarte, Hamburg.**—*M.R.*

6A–60 551.551:016 551.574:016

†U. S. National Advisory Committee for Aeronautics, **Index of NACA technical publications, June 1951–May 1953.** Wash., D. C., **1953.** 230 p. **DLC**—Section 6 (meteorology) has subsections on gusts, structure frequency and turbulence and ice formation and Section 7.3 ice prevention. Lists over 50 papers published by NACA during period 1951–53 covered by this index supplementary to that for 1915–49, and 1950–51 (*see items* I–179 and 2.7–10, Sept. 1950 and July 1951, *MAB*). The most recent Index, issued Sept. 1, 1954, covers June 1953–May 1954. *Subject Headings:* **1. Turbulence bibliographies 2. Icing bibliographies 3. NACA index.**—*M.R.*

6A–61 551.5(05)

†Weather Development and Research Bulletin; **Index to No. 1–17, April 1945–Aug. 1951.** *Weather Development and Research Bulletin*, Melbourne, No. 17:49–58, Aug. **1951. DWB**—Seventy-

seven articles, which have been published in this *Bulletin* since the first issue in 1945, are listed alphabetically by author and title with the U.D.C. subject classification number or numbers and the issue, month, year and pagination. The format of the *Bulletin* is to be changed with the next issue, so that it will appear as a regular journal from now on. (*Same item as* 3.4–27, March 1952, *MAB.*) *Subject Headings:* **1. Periodical indexes 2. Bibliographies.**—*M.R.*

V. LIBRARY ACCESSIONS AND CATALOGS

6A–62 551.5:016

†Argentina. Servicio Meteorológico Nacional, **Selección de reseñas bibliográficas, meteorológicas y geofísicas, año 1952.** [Selection of bibliographic reviews in meteorology and geophysics, 1952.] Its *Publicación, Ser. G,* **1953.** 97 p. **DWB**—A nice compilation of about 450 abstracts of articles and books received by the Argentine Meteorological Service during 1952, arranged according to the divisions and subdivisions of the U.D.C. About 20% of the articles are in other branches of geophysics (geomagnetism, oceanography, etc.). This is the second such "selected" compilation —the first one was for the year 1951. The abstracts are in Spanish and are quite complete, and of varying length, depending on importance of the work cited. The selection is made from the monthly classified list of accessions mimeographed by the Meteorological Service. *Subject Headings:* **1. Bibliographies of meteorological literature 2. Meteorology accession lists 3. Meteorology abstracts 4. Argentina.**—*M.R.*

6A–63 551.5:016

†Australia. Meteorological Branch, **Library Circular.** No. 1, July **1940**– Latest issue seen, no. 103, Sept./Oct. **1952. DWB**—A monthly or bi-monthly compilation of the accessions of the library of the Meteorological Service at Melbourne. The entries are arranged according to the Universal Decimal Classification (U.D.C.) system for meteorology (551.5) and are subdivided according to the major headings (i.e., climatology, visibility, optical phenomena, electrical phenomena, etc.). Each issue contains from 100 to 200 or more references without annotations. Double U.D.C. headings are used sparingly and when used the item is not cross referenced. A valuable and easily used periodical bibliography. (*Same item as* 3.10–16, Oct. 1952, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Meteorology accession lists 3. Bibliography on meteorology 4. U.D.C. catalogs.**—*M.R.*

6A–64 551.5:016

†Belgium. Observatoire Royal de Bruxelles, **Catalogue de ouvrages d'astronomie et de météorologie qui se trouvent dans les principales bibliothéques de la Belgique.** [Catalog of works on astronomy and meteorology which are found in the principal libraries of Belgium.] Brussels, Hayez, **1878.** 645 p. 6144 items. Classed order. Alphabetic author index and index of institutions for each part. **DLC**—Part II entitled, Météorologie (p. 273–399), contains about 1440 references (items no. 3074 to 4514) to works in 28 libraries of Belgium, arranged under 25 subject headings for meteorological works and 17 regional headings for climatological works. Pertinent literature in borderline subjects is found in the appendix (item 4515–5971). A supplemental section lists works omitted (No. 6070 to 6112) unintentionally. Many old and rare works are listed. Symbols are used to indicate location of each particular piece or serial. *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology.**—*M.R.*

6A–65 551.5:016

†Blue Hill Meteorological Observatory. Library, **Current Library Accessions,** No. 1, (?)– Latest issue seen, no. 881, Nov. 17, **1954.** Weekly. Typescript. Classed arrangement. Subtitle: Blue Hill Meteorological Observatory and the American Meteorological Society. **DWB, MH-BH**—These typed accession lists cover all of the branches of 551.5 (meteorology) and related fields, arranged according to the U.D.C. The regular journals of meteorology are not covered, but odds and ends of pieces, and references found in various abstracting journals and indexes, reviews and the like are classified and listed. Although not generally available this series provides a good source of material for anyone wishing to prepare an exhaustive bibliography on any very special field of meteorology. Cards are prepared from these lists for the Blue Hill Observatory Catalog. *Subject Headings:* **1. Meteorology accessions lists 2. U.D.C. bibliographies.**—*M.R.*

6A–66 551.5:016

†Germany. Deutscher Wetterdienst in der US-Zone. Wetterdienst-bibliothek, **Zugänge der Wetterdienstbibliothek.** [Accessions to the Weather Service Library.] v. 1, no. 1, March **1949**– Latest issues seen, v. 6, no. 12, 1954. Mimeo. **DWB**—This valuable series contains in each issue the accessions of the Bad Kissingen Library (under KARL KEIL's supervision) in all fields of meteorology and geophysics. Publications of the various weather services in Germany, contents of me-

teorological journals, meteorological articles in other journals, both native and foreign, and books or monographs of interest to meteorologists are listed. Before 1952 the material was listed by categories such as cited above. Since Jan. 1952 the material has been arranged by subject under the U.D.C. system so that each item can be clipped, pasted on cards and filed in any desired order. Each number contains 10–20 pages and was issued semimonthly (though somewhat irregularly) 1949 through 1951 and monthly from 1952. The coverage of German technical, scientific, agricultural, medical and popular periodicals is exceptionally good. Vol. 5, no. 1, 1954, is entitled **Verzeichnis der laufenden Zeitschriften und Periodika, Stand 1.1.1954** [List of current publications and periodicals, Jan. 1, 1954], 22 p. lists 381 German and 545 foreign titles. This comprises all of the current accessions which are of a repetitive nature (serials and periodicals), in any field which is of interest to the meteorologist of the German Weather Service, and from all countries of the world. Yearbooks, monthly data and abstract publications are included. Holdings are not shown. (*Same item as* 5.2–19, Feb. 1954, *MAB.*) *Subject Headings:* **1. Meteorology periodicals 2. Serial publication lists 3. Meteorology accession lists 4. U.D.C. bibliographies.**—*M.R.*

6A–67 551.5:017.1

†Great Britain. Meteorological Office. Library, **Subject catalog.** (Section 551.5 and related or relevant U.D.C. numbers.) Loose leaf. Chronological cumulation under specific U.D.C. number. Each section repaged from one. Items on each page renumbered from one. **GB-MO**—The "sheet" type catalog is in two parts: the first covering the period 1920–1935 was compiled from the various bibliographic sources such as the International Catalog of Scientific Literature and the Royal Meteorological Society Bibliographies as well as the holdings of the Meteorological Office, and is in the International Catalog Classification System. The continuation from 1936 to date is compiled in a similar manner, and is in the U.D.C. system, subdivided according to relationship and where pertinent, according to geographic area. The items are arranged chronologically according to accession date, and thus give at a glance a perspective of the best references on any one of several hundred specific subjects or aspects of meteorology. This is perhaps the most thorough and continuously maintained subject bibliography in meteorology since the U. S. Signal Corps Bibliography, (*see* 6A–1). Available from the Meteorological Office (1920–39) on microfilm. *Subject Headings:* **1. Subject bibliographies 2. U.D.C. bibliographies 3. Meteorology library catalogs.**—*M.R.*

6A–68 551.5:016 551.46:016

†Hamburg. Deutsche Seewarte, **Katalog der Bibliothek der Deutschen Seewarte.** [Catalogue of the library of the Deutsche Seewarte.] Hamburg, Hammerich und Lesser, **1890.** 619 p. 10,600 refs. **DLC**—An alphabetical list under major subject subdivisions of the 10,660 works in the library of the Deutsche Seewarte at the end of 1889. Largest categories are meteorology (2769), physics (1617), magnetism and electricity (974), geology (607) and chemistry and technology (563). (*Same item as* 5A–235, Jan. 1954, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology.**—*M.R.*

6A–69 551.5:016

†Hungary. Meteorológiai és Földmágnességi Intézet. Könyvtár, **A. M. Kir. Országos Meteorológiai és Földmágnességi Intézet Könyvtárának név-és tárgymutatója.** [Author and subject index of the Hungarian Meteorological and Geomagnetic Institute, Library.] Budapest, **1902.** 423 p. t-p. in Hungarian and German. Namen- und Sachregister der Bibliothek der K. Ungar. Reichsanstalt für Meteorologie und Erdmagnetismus. **DWB, DLC**—Over 5000 works on meteorology and geomagnetism in the library of the Hungarian Meteorological Service at Budapest, are listed alphabetically under the author's name, or under some key word in the title (such as Sonne, Meteorologie, Climate, Clouds, etc.). Works are from all countries and in many languages. Contents of a few serials are listed. Appended is a list of meteorological services and observatories in the various countries, and a list of meteorological bulletins put out in various places, and an alphabetical list of 63 periodicals in the Library. *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology. I. Szalay, László.**—*M.R.*

6A–70 551.5:016

†Israel. Meteorological Service, **Library Accessions,** No. 1, Oct. 1949– Latest issue seen, No. 28, April/June **1954.** Early issues in typescript and irregular. Currently quarterly, mimeographed, in classed order with U.D.C. numbers. **DWB** (no. 16, May/June 1951–)—About 100 accessions are listed by U.D.C. number in each quarterly issue. Bibliographic citations are quite complete but are not annotated. *Subject Headings:* **1. Meteorology accession lists 2. Meteorology bibliographies 3. U.D.C. bibliographies.**—*M.R.*

6A–71 551.5:016

†London. Science Museum. Science Library, **Weekly List of Accessions to the Library,** No. 1, 1931– Last issue seen, No. 1232/1235, Aug. 28, 1954. Mimeo. Classed U.D.C. order under 3 general groups: Bibliographies; Periodicals; and Books and pamphlets. Monthly cumulation, of the **Weekly List,** the 4 or 5 issues per month bound together with common cover title. Title varies: no. 225, Nov. 16, 1935 through no. 470, Dec. 1939 as its **Weekly Bibliography of Pure and Applied Science.** Cover title varies: –1952, **Monthly List of Accessions to the Library.** 1953– **List of Accessions to the Library. DLC**—Each list contains a few unannotated items under 551.5 or 016:551.5 (bibliographies), 05:551.5 (periodicals in meteorology), etc. Arranged by U.D.C. number. *Subject Headings:* **1. Meteorology accession lists 2. Meteorology bibliographies 3. U.D.C. bibliographies.**—*M.R.*

6A–72 551.5:016(861)

†Ramírez, Jesús Emilio (*Dir. Ser. Met. Nac. Colombia*), **Bibliografía de la Bibliotéca del Instituto Geofísico de los Andes Colombianos sobre Geología y Geofísica de Colombia.** [Bibliography of the Library of the Geophysical Institute of the Colombian Andes on the Geology and Geophysics of Colombia.] *Instituto Geofísico de Los Andes Colombianos, Bogotá, Ser. C. Geología, Boletín,* No. 2, 1951. 267 p. **DWB**—An unannotated bibliography of approximately 2500 items arranged alphabetically by author. The classified subject index includes the following topics of interest to meteorologists: climatology, geodesy, hydrology, rainfall, meteorology and oceanography. The citations are to articles in Spanish, English, French and German. Imprints cover the period from 1728–1951. *Subject Headings:* **1. Geology 2. Geophysics 3. Bibliography on meteorology. I. Instituto Geofísico de Los Andes Colombianos. Bibliotéca.**—*M.L.R.*

6A–73 551.5:017.2

†Royal Meteorological Society. Library, **Catalogue of the Library of the Meteorological Society.** London, Williams and Strahan, 1862–1891. First Catalogue, 1862, 11 p. 195 entries. Second Catalogue, 1864, 14 p. 275 entries. Third Catalogue, 1876, 86 p. 1,214 entries (this is the only edition arranged by subject, modelled after the Pulkovo, Russia catalogue). Fourth Catalogue, 1891, 222 p. 4800 entries. From Preface of 4th ed., p. vii, signed G. J. Symons, J. W. Tripe, secretaries, Dec. 1890. **DWB, DLC**—The subject index arranges the material under about 100 sub-subjects under 24 major headings (arranged alphabetically). Where appropriate the subjects are also subdivided by countries. The author sections comprise I. Meteorology, II. Miscellaneous, III. Meteorology and Magnetic Observations, Reports of Institutions, etc., IV. Sanitary and Medical Reports and V. Transactions of Academies, Societies, etc., and VI. Journals. *Subject Headings:* **1. Meteorology library catalogs 2. Meteorology bibliographies.**—*M.R.*

6A–74 017.1(753 Washington) *Congress*

†U. S. Library of Congress, **Card Catalog.** Continuous alphabetical file of author, title and subject entry cards. **DLC**—The Library of Congress catalogs comprise the second largest source of material on meteorological and related subjects in America. The classed catalog (shelf-list) is available only to the staff, but in the classes QC850–999 lists over 10,000 serials, books, monographs and bound pamphlets, atlases and collections of climatological data and an equal number of items under (QC800–849) geophysics, aeronautics (TL), oceanography, hydrology and glaciology (GA, GB and GC), expeditions (G), agriculture and soils, medicine, engineering, physics, astronomy, etc., etc. Much material is also unclassified in the Orientalia and Slavic Divisions and in the Government Publications Reading Room. Bibliographies on meteorology and allied subjects are in class Z. The subject headings aside from the above, which must be consulted in the Dictionary Catalog or the Printed Catalog, include about 50 subjects (i.e., snow, rain, temperature, fog, cyclones, climatology—subdivided by country, state, region or city), and similar broad subjects, or even specific subjects if any book or monograph has been written thereon (i.e. mesosphere). Two of the printed Library of Congress catalogs of interest are:

U. S. Library of Congress, **Author catalog. A cumulative list of works represented by the Library of Congress printed cards 1948–1952.** v. 1–23, 1953. Continued by its: **Library of Congress Catalog. A cumulative list of works represented by the Library of Congress printed cards, Books: Authors, 1953–** 9 monthly issues and 3 quarterly cumulations; annual and 5 year cumulations.

U. S. Library of Congress, **Library of Congress Subject Catalog. A cumulative list of works represented by the Library of Congress printed cards, 1950–1952.** 1950, 3 v. 1951, 3 v. 1952, 3 v. Continued by its: **Library of Congress catalog. A cumulative list of works represented by L.C. printed cards, Books; Subjects, 1953–** 3 quarterly issues; annual cumulation. *Subject Headings:* **1. Card catalogs 2. Author catalogs 3. Subject catalogs 4. Meteorology bibliographies.** —*M.R.*

6A–75 551.5:017.1

†U. S. Signal Corps, **Catalog of the Library, Office Chief Signal Officer, United States Army, Washington, Jan. 1, 1880.** Wash., D. C. Office of the Chief Signal Officer, 1880. 142 p. Arranged in 7 classes, each alphabetical by author. (Astronomy and meteorology; Electricity and magnetism; Military and naval; Miscellaneous; Atlases, maps and charts; Periodicals; Pamphlets.) **DWB**—In 1872 there were listed 1300 works and 24 periodicals. In 1880 the number had grown to 4500. *Subject Heading:* **1. Meteorology bibliographies.**—*M.R.*

6A–76 551.5:06:016

†U. S. Weather Bureau, **Library Circular,** v. 1(1)–9(12), Jan. **1943**–Dec. 1951. No more published. irreg: v. 1–2(6), monthly; 2(7/12), in one no.; v. 3, quarterly; v. 4–9, monthly. 9(10–12) in ms. form only. Pt. 1, Selected Library Accessions (some years arranged by Decimal classification, later years alphabetical by author.) Pt. 2, Weather Bureau publications received by the Library. [Occasionally a Pt. 3, Special subject bibliography.] **DWB**—About 800–1000 items a year are listed with full bibliographic citations but no annotations. Through 1949 the items were arranged according to the U.D.C. system. 1950–51 entries are listed alphabetically. A bibliography on military meteorology appeared in the April 1944 issue; a special bibliography (250 items) of the works of W. J. Humphreys in the Jan. 1950 issue, and a list of moving pictures on meteorological subjects in the Feb. 1950 issue. Lists of periodicals available in the Weather Bureau Library appear in each volume. The holdings of the **U. S. Weather Bureau Library** are indexed in a dictionary catalog (author and subject) of about 120,000 cards. Two supplementary catalogs of about 100,000 cards each (one by author and one by subject arrangement) contain miscellaneous analytics from the catalog listed in 6A–77 and other sources. *Subject Headings:* **1. Meteorology accession lists 2. U.D.C. bibliographies 3. Motion picture film bibliographies.**—*M.R.*

6A–77 551.5:017.1

†U. S. Works Progress Administration, **Card catalog on meteorology. 1937. DWB**—As a "work" project under the W.P.A., the meteorological articles in 13 standard American or British Scientific Journals were indexed according to author and subject (U.D.C. system), making a total of about 40,000 cards for approximately 10,000 articles. The bibliography was prepared in card form and reproduced by hectograph so that 10 sets of cards were available to the most important libraries concerned with meteorology. These were (1) The Library of Congress, (2) U. S. Weather Bureau Library, Wash., D. C., (3) U. S. Army Library (Signal Corps), (4) Blue Hill Observatory, (5) New York Public Library, (6) New York University; Weather Bureaus at (7) Chicago, (8) San Francisco, (9) New York and (10) Asheville, North Carolina. The periodicals analyzed were: 1. American Journal of Science, 1818–1907; 2. American Philosophical Society, Proceedings, 1838–; 3. American Philosophical Society, Transactions, 1786–1936; 4. American Meteorological Society, Bulletin, 1920–1937; 5. Journal of the Aeronautical Sciences, 1934–1937; 6. Journal of the Franklin Institute, 1826–1937; 7. Marine Observer, London, 1924–37; 8. Physical Review, 1894–1937; 9. Popular Science Monthly, 1872–1912; 10. Royal Meteorological Society, Quarterly Journal, 1872–1937; 11. Science 1883-1936; 12. Scientific Monthly, 1915-1937; 13. Scientific American, 1845-1937; 14. Tycos, Rochester, 1915–1937. It can be seen that this catalog would be heavily weighted with popular English language articles. Also: U. S. Works Progress Administration, N. Y. City, **Bibliography of meteorological literature by the Works Progress Administration.** Project number 265-97-6000, sponsored by U. S. Weather Bureau. Prepared by Benjamin Parry. (1937). 6 p. Appended: Brooks, C. E. P., **Classification of meteorological literature.** 3 p. Appendix: U.D.C. Tables for meteorology. **DWB**—Description and history of the Card catalog on meteorology, with list of publications analyzed, and institutions where sets of the cards were intended to be deposited. *Subject Headings:* **1. W.P.A. bibliography 2. U.D.C. bibliographies 3. Card catalogs 4. Meteorology bibliographies. I. Parry, Benjamin** (*ed.*).—*M.R.*

VI. NATIONAL BIBLIOGRAPHIES

6A–78 551.579:016

†International Union of Geodesy and Geophysics. Association of Scientific Hydrology [**International Bibliography of Hydrology**], 1934?– Beginning date according to various member country. Bibliographies issued for the Association of Scientific Hydrology by various entities in each country. Variation in periodicity and regularity, as well as format. **DLC, MH-BH,** and **DWB** have scattered issues for various countries. The following list shows recent accessions in the U. S. Weather Bureau Library.

Belgium. Bibliographie Hydrologique, 1935/1937; 1938/1947. (latter pub. 1950. 197 p.)
Denmark. Hydrologisk Bibliografi, July 1, 1937/Dec. 31, 1947. Pub. 1950. 15 p.
France. Bibliographie Hydrologique, v. 1, 1935/1936; v. 2, 1936–1938; 1946/1951. (latter pub. 1952. 38 p.)
Netherlands. Hydrologische Bibliografie, 1934–1937; 1938/1947. (latter pub. 1950? 67 p.)

Norway. Hydrologisk Bibliografi, 1940/1950. pub. 1953. 19 p.
Poland. Bibliografia Hydrologiczna, 1935/1938; 1949. (latter pub. 1952, 103 p.)
Sweden. Hydrologisk Bibliografi, 1935/36; 1937; years 6–14, 1939/1947. (latter pub. 1949. *see* 2.7–149, July 1950, *MAB.*)
Switzerland. Hydrologische Bibliographie, years 1–9, 1939/1947. 39 p.
Contribution from the United States and Canada, 1941/1950. (Abstracted separately, *see* 6A–102)
Contribution from Germany. (Abstracted separately, *see* 6A–85.)

The succeeding list indicates holdings in the Weather Bureau Library of additional countries:

Argentina, 1935; Australia, 1937; Austria, 1934/36; Bulgaria, 1935/37; Czechoslovakia, 1935/36; Estonia, v. 3–5, 1936/38; Great Britain, 1936/37; Italy, v. 2, 1935/36; Japan, 1935/36; Latvia, 1934/38; Lithuania, 1935/38; Morocco, 1935.

Although each of these bibliographies follows the standard pattern set forth by the I.U.G.G., I.A.S.H. since 1934, each one differs slightly in period covered, languages of original title, amount of annotations, and language of annotations and form or type of printing. Annotations (if any) are usually brief and in French or English. The number of items in each issue depends on the length of period covered as well as the thoroughness and available volume of literature. For instance, the one for the U.S.A. and Canada (1941 50) contains 4500 references, whereas some issues contain fewer than 100 items. The general subject arrangement is fairly uniform: I. Hydrometeorology, II. Water courses, III. Lakes, IV. Snow and Ice, and Glaciers, V. Ground water, VI. Hydrologic cycle, VII. Application to Hydrology, VIII. General works, IX. Miscellaneous. In some issues a list of journals represented in the entries, or a subject or author index is provided. Most bibliographies are printed on one side only, so entries can be cut and pasted on cards. *Subject Headings:* **1. Bibliographies on hydrology 2. Hydrology bibliographies.**—*M.R.*

6A–79 551.510.535:016

†International Union of Geodesy and Geophysics. Association of Terrestrial Magnetism and Electricity, Oslo, Aug. 1948, **Transactions.** Its *IATME Bulletin*, No. 13, **1950.** 568 p. illus., refs. **DWB**—In Pt. III (p. 65–248) there are 24 national reports, each with more or less intensive bibliographies of works produced in the respective country during the war and post war years. Subject matter includes ionosphere and aurora as well as terrestrial magnetism and atmospheric electricity. The contribution from France contains 157 items, Japan 174 items, Sweden 43, India 30, Belgium 26, Norway 20 and Hungary 11 items. (*Same item as* 4J–190, Oct. 1953, *MAB.*) *Subject Headings:* **1. National bibliographies 2. Ionosphere bibliographies 3. Bibliography on the ionosphere.**—*M.R.*

6A–80 551.5:016(71) 551.46:016

†National Research Council of Canada, **Bibliography of Canadian Geophysics 1951** [and] **Canadian Bibliography of Geodesy.** *Canadian Geophysical Bulletin*, Ottawa, 4(4), [Nov. 15, **1951.**] 49+10 p. **DWB**—Contains references and abstracts (many original and some copies) of 49 current papers on meteorology, 14 on hydrology, 11 on oceanography and 15 on atmospheric ionization written by Canadians or of special interest to Canada. (*Same item as* 4.5–20, May 1953, *MAB.*) *Subject Headings:* **1. Bibliography on meteorology 2. Bibliography on oceanography 3. Canada.**—*A.A.*

6A–81 551.5:016(44)

†Rapport sur l'activité météorologique des services de météorologie et de physique du globe en 1945, 1946 et 1947. [Report on the meteorological activity of the meteorological services in 1945, 1946 and 1947.] *International Union of Geodesy and Geophysics, Association of Meteorology, Oslo,* **1948,** *Procès-verbaux*, 3:86–115. 3 figs., biblio. p. 99–115. In French. **DWB**—Consists of a bibliography of more than 300 works on meteorology published in 1945, 1946 and 1947 in France. Works are listed alphabetically by author. (*Same item as* 3.7–12, July 1952, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliographies on meteorology 3. France.**—*M.R.*

6A–82 551.506.2:016

†Rothé, J. P., **Bibliographie des travaux français relatifs à l'Année Polaire, 1932–1933.** [Bibliography of French works relating to the Polar Year, 1932–1933.] *Strasbourg. Université, Institut de Physique du Globe, Annales*, New Ser., *Pt. 3, Géophysique*, v. 6:71–76, **1950.** **DWB**—The contents of the official publications on the Polar Year (in 3 volumes) are listed by author and title, and 74 separate articles cited in 3 groups: 1) articles by members of the French expeditions to Scoresby Sound and Tamanrasset; 2) other French publications relating to the Polar Year; 3) popular articles and works; 4) documents and manuscripts not published and 5) films. Many subjects are covered. (*Same item as* 3.9–35, Oct. 1952, *MAB.*) *Subject Headings:* **1. Bibliography on the Polar Year, 1932–1933 2. International Polar Year, 1932–1933 3. France.**—*M.R.*

6A–83 551.5:016

†**F.I.A.T. Review of German Science, 1939–1946.** Wiesbaden, Pub. by Office of Military Government for Germany, Field Information Agencies Technical, British, French, U. S., 1948. Series of monographs by various scientists covering fields of natural sciences and medicine in Germany in 1939–1946. Printed by Dieterich's Verlagsbuchhandlung. Title-page in English. General foreword to series in English and French. Foreword to each monograph in German. Text in German. This series also issued as **Naturforschung und Medizin in Deutschland 1939–1946, für Deutschland bestimmte Ausgabe der FIAT Review of German Science.** Wiesbaden, Dieterich'sche Verlagsbuchhandlung, 1948. Titles of interest are as follows: MÜGGE, RATJE and others, **Meteorology and physics of the atmosphere.** 291 p. figs., tables, numerous bibliogs. throughout, eqs. (*Same item as* 9–1, Sept. 1950, *MAB.*) **DWB, DLC.** TEN BRÜGGENCATE, PAUL and others, **Astronomy, astrophysics and cosmogony.** 441 p. numerous bibliogs., refs. and eqs. (*Same item as* 2.2–45, Feb. 1951, *MAB.*) **DWB, DLC.** BARTELS, JULIUS and others, **Geophysics,** Pt. 1 and 2. Pt. 1, 237 p. figs., tables, numerous bibliogs. Pt. 2, 306 p. figs., tables, numerous bibliogs. (*Same item as* 6–4, June 1950, *MAB.*) **DWB, DLC.** WISSMANN, HERMANN VON and others, **Geography. Pt. 1, General Geography.** 220 p. Extensive bibliogs. throughout. Pt. 2 (not published yet?) **Regional Geography, Sec. 1. Pt. 3, Regional Geography, Sec. 2, Europe (except Central Europe).** 126 p. Extensive bibliogs. throughout. **Pt. 4, Regional Geography, Sec. 3, Central Europe.** 177 p. Extensive bibliogs. throughout. (For Pt. 1, *see item* 5.6–13, June 1954, *MAB.*) **DLC**—In this series there are a dozen or more sections which are of interest to meteorologists. Each section contains a systematic running "account" of work done in each specific branch of the subject during the period 1939–1946, by each author whose works are listed in the references which accompany each article. Examples of some of these are: 1. General and regional climatology by K. KNOCH (105 refs.); 2. Marine climatology by ERICH KUHLBRODT (32 refs.); 3. Upper air climatology by H. FLOHN (20 refs.); 4. Microclimatology by WILHELM KREUTZ (27 refs.); 5. Bioclimatology by KONRAD BÜTTNER (29 refs.); 6. Radiation and visibility by FRITZ MÖLLER (130 refs.); 7. Optical phenomena by RUDOLF MEYER (77 refs.); 8. Cloud physics by FRITZ MÖLLER (162 refs.); 9. Dynamics of the atmosphere by HEINZ LETTAU (182 refs.); 10. Synoptic meteorology by R. SCHERHAG (81 refs.); 11. Long range forecasting by HEINRICH SEILKOPF (14 refs.); 12. Atmospheric tides and singularities by H. FLOHN (88 refs.); 13. Meteorology of the high atmosphere by RUDOLF PENNDORF and DIETRICH STRANZ (63 refs.); 14. Meteorological instruments by HANS MÜLLER (111 refs.); 15. Atmospheric chemistry by HANS CAUER (52 refs.); all in the volume on Meteorology. In the volume on Astronomy is an account of work done in the field of terrestrial effects of solar phenomena by K. O. KIEPENHEUER (44 refs.), and in the 2 volumes on Geophysics are articles on Geomagnetism and the aurora by J. BARTELS (141 refs.); the Ionosphere by W. DIEMINGER; Atmospheric electricity by H. ISRAËL; Oceanography by G. BÖHNECKE, G. NEUMANN, K. KALLE and W. HANSEN (150 refs.) and Atmospheric ozone by E. REGENER (22 refs.). In the volumes on Geography there is a section on Microclimatology by R. GEIGER; one on Climatology by H. FLOHN and J. BLÜTHGEN; one on Quaternary climates by H. GAMS; one on Medical geography by E. RODEWALDT and one on Glaciology by F. MACHATSCHEK. *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. Germany.**—*M.R.*

6A–84 551.5:016

†Hellmann, Gustav, **Repertorium der Deutschen Meteorologie. Leistungen der Deutschen Schriften, Erfindungen und Beobachtungen auf dem Gebiete der Meteorologie und des Erdmagnetismus von den ältesten Zeiten bis zum Schlusse des Jahres 1881.** [Repertorium of German meteorology. Survey of German literature, research and observations in the field of meteorology and geomagnetism from ancient times to the end of 1881.] Leipzig, Engelmann, **1883.** 995 p. map, table (both fold.). **DLC**—This is the most thoroughly prepared and edited bibliography ever published in any field of meteorology. It contains references to over 8000 articles written by about 3400 German authors, prior to 1881, together with as full biographical information about most of the authors as could be obtained by combing all of the biographical sources available and sending questionnaires to all of the living German writers included (85% response was obtained). In addition, there is a useful subject index, an index of observations by place, extensive historical notes and a thorough statistical analysis of the material listed (by year from 1484–1881, a comparison of periodical and monograph literature by lustrums from 1666 on), and a chronological list of important events in meteorology. Statistics are represented graphically. (*Same item as* 3D–26, April 1952, *MAB.*) *Subject Headings:* **1. Bibliography on meteorology 2. Meteorology bibliographies 3. Germany.**—*M.R.*

6A–85 551.579:016

†International Union of Geodesy and Geophysics. Association of Scientific Hydrology. [**International Bibliography of Hydrology.**] **Hydrologische Bibliographie, Deutschland.** [Hydrological Bibliography, Germany.] First issue for **1936,** pub. 1938. Issue for 1945/49, pub. 1954, Koblenz.

Issue for 1950, pub. 1953. Place and issuing body varies. Annual. **DLC**—This series, while conforming in general outline and format to those issued by other countries (U. S., France, Czechoslovakia, Sweden, etc.) under the auspices of the International Association of Scientific Hydrology, I.U.G.G., has a number of features which make it unique. Printed by letter press, with great contrast between author, title, journal, collation and abstract, the bibliography is the most readable of any series yet issued. A list of journals gives place of publication of each. No abbreviations are used in abstracts. The first section (Hydrometeorology) of each annual volume contains important references on climatic changes, rain, snow, evaporation and humidity. Other sections are: II. Runoff, III. Lakes, IV. Glaciers, V. Ground water and springs, VI. Hydrologic cycle, VII. Applications of other sciences to hydrology, VIII. General works and IX. Miscellaneous. At the end of each volume is an author index. The 1940 issue (Koblenz, 1953) contains 331 annotated references. (*Same item as* 5.2–231, Feb. 1954, *MAB.*) *Subject Headings:* **1. Hydrometeorology 2. Hydrology bibliographies 3. Bibliography on hydrology.**—*M.R.*

6A–86 551.5:06:016

India. Meteorological Dept., **Publications of the . . . Department.** (**Complete list up to July 1950 including those publications which are now out of print.**) Its *India Weather Review: Annual Summary*, **1945,** Part C, Append. Delhi, pub. 1951. 10 p. **DWB** –Lists several series dating back of 1875 or earlier. The major series are **Cyclone Memoirs** (1888–1893), **Meteorology for airmen in India** (1936–1949), **Indian Meteorological Memoirs** (1875–1950) containing 29 volumes each with up to 14 parts; **Scientific Notes,** No. 1 to 135 (11 vols. 1927–1950) and **Technical Notes** (No. 1–28, 1943–1950?) plus Observatory Bulletins, periodical publications or the Department, etc. (*Same item as* 4.3–41, March 1953, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Publication lists 3. India.**—*M.R.*

6A–87 55:016

†**Bibliografia Geofisica Italiana, 1942–1953.** [Italian geophysical bibliography, 1942–1953.] Rome, Associazione Geofisica Italiana, Sept. **1954.** 223 p. Edited by the Istituto Nazionale di Geofisica under the auspices of the Italian Coordinating Committee for the 10th General Assembly of the International Union of Geodesy and Geophysics. **MH-BH**—This extensive annotated bibliography of Italian scientific activity in the field of geophysics from 1942 to 1953 contains a total of 1207 items. The bibliography is subdivided into 7 chapters each edited by a specialist. The individual chapters are: Applied geophysics (217) by C. Aquilina and L. Solaini; Terrestrial Magnetism and Atmospheric Electricity (95) by M. Giorgi; Meteorology including solar radiation and atmospheric optics (347) by M. Tenani; Oceanography (216) by M. Tenani; Terrestrial radioactivity (66) by C. Festa; Seismology (100) by P. Celoi and Volcanology (166) by G. Imbo. *Subject Headings:* **1. Geophysics bibliographies 2. Bibliography on geophysics 3. Italy. I. Rome. Istituto Nazionale di Geofisica II. Giorgi, M.** (*ed.*) **III. Bilancini, Raoul** (*ed.*) **IV. Tenani, M. V. Festa, C. VI. Cali, P. VII. Associazione Geofisica Italiana.**—*I.L.D.*

6A–88 551.5:016

†Bilancini, Raoul, **L'attività meteorologica italiana nel triennio 1948–1950.** [Italian activity in meteorology during 1948–1950.] *Revista di Meteorologia Aeronautica*, Rome, 13(2/3):52–61, April/Sept. **1953.** 113 refs. Italian, French, English and German summaries p. 52. **MH-BH**—A long list of the publications of the Italian meteorologists reporting on research during 1948–50 in various branches of meteorology, with citations to articles in the bibliography (dynamics, synoptics, local meteorology, clouds, condensation nuclei, aerology, atmospheric optics, radiation, instruments and methods, applied meteorology, climatology). Research in progress is also summarized and an excellent bibliography included. (*Same item as* 5.11–11, Nov. 1954, *MAB.*) *Subject Headings:* **1. Meteorological research 2. Progress in meteorology 3. Meteorology bibliographies 4. Italy.**—*M.R.*

6A–89 551.5:016(52) 551.5:06(52)

†Hatakeyama, Hisanao and Syono, Sigekata, **Meteorological researches in Japan during 1948–1950.** *I.U.G.G. Association of Meteorology, Brussels*, **1951,** *Rapports Nationaux*, p. 14–36. bibliog. **DWB**—Detailed account of meteorological research in Japan, conducted by the Central Meteorological Observatory, local observatories, the meteorological divisions of universities and The Meteorological Research Institute. Extensive bibliography of papers, published in 9 meteorological or geophysical journals, covers all fields of meteorology. No attempt was made to list meteorological papers published in Japanese geographical, agricultural, forestry and other journals. (*Same item as* 5.4–14, April, 1954, *MAB.*) *Subject Headings:* **1. Meteorological research 2. Meteorology bibliographies 3. Bibliography on Japan 4. Japan.**—*A.A.*

6A–90 551.5:016

†Aguilar y Santillán, Rafael, **Bibliografía meteorológica Mexicana que comprende las publicaciones de meteorología, física del globo y climatología hechas hasta fines de 1889.** [Mexican meteorological bibliography, comprising publications on meteorology, geophysics and climatology, to the end of 1889.] Mexico, Edición de la Sociedad Antonio Alzate, 1890. 44 p. 228 items. **DWB, DLC**—Pt. 1, alphabetized by personal author. Pt. 2, by anonymous, corporate, institutional author. Pt. 3, items from outside Mexico. Pt. 4, items relating to geodynamics and volcanology. "Continuation for 1890 printed in *Sociedad Científica Antonio Alzate, Memorias*, v. 4:265–76; for 1891, in its v. 7:97–107; for 1892, in its v. 7:5–16; for 1893 in its v. 8:5–10; for 1894 in its v. 9.5–11; for 1895 in its v. 9:313–323." *Subject Headings:* **1. Bibliography on meteorology 2. Climatology bibliographies 3. Mexico.**—*M.R.*

6A–91 551.5:061(09)

†Netherlands. (K.) Meteorologisch Instituut, **1854 Koninklijk Nederlands Meteorologisch Instituut 1954.** [The Netherlands Meteorological Institute, 1854–1954.] 'S-Gravenhage, Staatsdrukkerijen Uitgeverijbedrijf, **1954.** 469 p. numerous figs., including ports. and colored plates; tables, refs. and bibliogs, throughout, eqs. List of publications of the Meteorological Institute p. 448–461. **DWB**—In this elaborate memorial volume describing the history and operations of the Royal Dutch Meteorological Service, Appendix 3 lists about 260 publications of individual members of the staff of the KNMI, and of the institution itself, dating from 1850 to 1952. Ch. 14, on Library and Publications, lists 25 historic works from the 17th and 18th centuries which are in the possession of the KNMI Library at De Bilt. Numerous references appear in the separate scientific articles in this volume. (*Same item as* 5.10–7, Oct. 1954, *MAB.*) *Subject Headings:* **1. Meteorology bibliography 2. Publication lists 3. History of meteorology 4. Netherlands.**—*M.R.*

6A–92 551.5:015

†Poland. Pánstwowy Instytut Meteorologiczny, **Bibljografja prac opublikowanych przez pracowników i dawnych współpracowników Pánstwowego Insytutu Meteorologicznego . . .** [Bibliography of the staff and former collaborators of the National Meteorological Institute of Poland.] Warsaw, **1935.** 113 p. **DLC**—Alphabetical by author, chronological thereunder. Staff publications in separate list from those of former staff members. *Subject Headings:* **1. Meteorology bibliographies 2. Publication lists 3. Poland.**—*M.R.*

6A–93 551.5:015:019.941(46)

†Campmany, Maria, **Bibliografía de la meteorología Catalana.** [Bibliography of Catalan meteorology.] *Catalonia. Servei Meteorològic, Notes d'Estudi*, No. 68:399–523, **1937. DLC**—A compilation of 718 annotated and classified (U.D.C.) references to meteorological works in Catalan or by Catalan authors, arranged alphabetically by author; with a subject and a geographic index and a Catalan version of the I.M.O. Universal Decimal Classification for meteorology appended. The citations cover the period 1788–1937 and are very carefully edited. (*Same item as* 4.5–18, May 1953, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Meteorology abstracts 3. Meteorological terminology 4. U.D.C. for meteorology 5. Catalan language 6. Catalonia 7. Spain.**—*M.R.*

6A–94 551.5:015(485)

†Fineman, C. G., **Forteckning pa Svenska arbeten och uppersatser i meteorologi publicerade 1856–1881.** [Index to the meteorological publications from Sweden, 1856–1881.] Stockholm, **1881.** 6 p. **DWB**—Many papers by Hildebrandsson and Ekman listed, as well as others. *Subject Headings:* **1. Meteorological publication lists 2. Swedish bibliographies 3. Sweden.**—*M.R.*

6A–95 551.5:63:015(494)

†Kuhn, W., **Schweizerische Publikationen über Agrarmeteorologie aus dem Zeitraum 1921–1950.** [Swiss publications on agricultural meteorology during 1921–1950.] Zurich, Schweizerische Meteorologische Zentralanstalt, Dec. **1951.** 6 p. Mimeo. **DWB**—A continuation of the **"Bibliographie der schweizerischen Landeskunde,** Fasc. IV, pt. 4 **Klimatologie,"** published in 1927 by R. Billwiller (6A–137), including all publications by Swiss authors or by foreign authors in Swiss periodicals, as far as it was possible to discover in the fields of microclimatology, bioclimatology and meteorology. Specific headings for phenology, ecology, frost and frost prevention, hail and hail shooting, drought, winds and influence of weather on domestic animals (stall climate). About 120 references are included (unannotated). *Subject Headings:* **1. Agricultural meteorology bibliographies 2. Swiss bibliographies 3. Switzerland.**—*M.R.*

6A–96 551.5(05)

†Switzerland. Meteorologische Zentralanstalt, **Bibliographie météorologique suisse.** [Swiss meteorological bibliography.] Began publication **1946;** last issue seen, 54–1, Jan./March **1954.** Quarterly. mimeo. Author index in each issue. Current issues about 12 pages. **DWB** (broken)—The material in each quarterly issue is arranged under 23 general subject headings roughly following the headings of the U.D.C. (551.5) but not in exactly the same order. U.D.C. numbers are assigned to each item, however. Articles which are published by anyone in Swiss journals or by Swiss scientists in any country are included. In the latest issue about 90 articles by 60 odd authors are included. About half of the items are annotated. Titles are given in original language and in French, unless already in French. *Subject Headings:* **1. Meteorology abstracts 2. U.D.C. bibliographies 3. Swiss bibliographies 4. Switzerland.**—*M.R.*

6A–97 551.5:016

†Ohio. State University. Mapping and Charting Research Laboratory, **Selected bibliography of Soviet literature on meteorology and climatology.** Columbus, Ohio, Dec. 28, **1953.** 184 p. **DWB**—The various scientific series of the Soviet Academy of Sciences, the Geographical Society, the Hydrometeorological Service and Geophysical Observatory, the Northern Sea Route, the regional societies and academies and the universities which contain occasional meteorological articles are presented in an orderly fashion, and representative articles from each listed in the bibliography (English translations of titles are carelessly edited and often misleading). About 400 articles in over 200 different serials are included. Also about 50 books and monographs (1911–1951) are listed alphabetically by author. *Subject Headings:* **1. Periodical lists 2. Meteorology bibliographies 3. National bibliographies 4. Russian meteorological literature 5. U.S.S.R.**—*M.R.*

6A–98 55:015

†Perel', IU. G., **Ukazatel' literatury po geofizike, vyshedsheĭ v sentiabre-dekabre 1953 g.** [Index of literature in geophysics published during Sept.–Dec. 1953.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geofizicheskaia,* No. 2:199–201, **1954.** entirely refs. **DLC**—A list of books, pamphlets, collections of articles and of articles published in 1953 by the Institute of Geophysics, Institute of Oceanography, Central Aerological Observatory, Marine Hydrographic Institute, Kirov Pedagogical Institute and of the Admiral Makarov Advanced Arctic Sea School and articles published in various scientific journals. Most of these items deal with all the aspects of meteorology and oceanography. *Subject Headings:* **1. Meteorology bibliographies 2. Publication lists 3. U.S.S.R.**—*I.L.D.*

6A–99 551.5:016(482)

†U. S. Air Weather Service, **Bibliography of Russian texts and translations.** Dec. 18, **1947.** 68 p. 278 items (alphabetical by author). At head of t-p: Distributed to the Panel on Meteorology for Information. "This bibliography supersedes the **Bibliography: Translated titles available in Hqs Air Weather Service, dated Dec. 1946." DLC**—A list of 278 Russian texts and translations available in 1947 in the Air Weather Service Technical Files. Russian titles and translations thereof are supplied where possible. In some cases translations are in German. Sources are given as accurately as possible. *Subject Headings:* **1. Meteorology bibliographies 2. Russian translations 3. U.S.S.R.**—*M.R.*

6A–100 551.5:016:8.03

†U. S. Library of Congress, **Bibliography of Translations from Russian Scientific and Technical Literature.** List No. 1, Oct. **1953;** latest issue seen, No. 15, Dec. **1954.** Prepared by its Scientific Translations Center under the sponsorship of the National Science Foundation and the Atomic Energy Commission. Monthly. Price: from Card Div., Library of Congress, Wash., D. C. $3.00 annual; $.25 per issue. Alphabetical by author under broad subject heads, such as General science, Mathematics, Astronomy, Physics, Earth sciences, Biological sciences, Agriculture, Medicine, Engineering, Technology. Lists available translations which have been deposited with, or loaned to, the Scientific Translations Center by various agencies and bodies. Includes, when possible, notices of translations available by direct purchase from commercial and other translation services. Photocopies (or microfilm) of titles available from the Center, indicated with symbol RT. **DWB DLC**—In the first 13 issues will be found listed under the heading Earth Sciences, at least 200 references to translations of articles on meteorology, climatology, hydrology, oceanography or upper atmospheric physics. Most of the translated articles are from recent standard Russian scientific periodicals, although at times works are from rare or older sources. *Subject Headings:* **1. Periodical bibliographies 2. Russian meteorological literature 3. Russian translations. 4. U.S.S.R.**—*M.R.*

6A–101 551.5(09):06:016(73/9)

†Byers, Horace R. and Baum, Werner A., **Meteorological research in the United States 1939–1948.** *International Union of Geodesy and Geophysics, Association of Meteorology, Oslo,* **1948,** *Procès*

Verbaux, 3:11–79, Nov. 1950. biblio. p. 57–79. **DWB**—A most comprehensive summary of advances in every field of meteorology and climatology for the war and post-war years, with comments on each special field and appended bibliographic references. The work of the various universities, the military services and the U. S. Weather Bureau are shown in true perspective. At least 500 works are mentioned and many of them reviewed. (*Same item as* 3.5–18, May 1952, *MAB.*) *Subject Headings:* **1. Progress in meteorology 2. Meteorological research 3. Meteorology bibliographies 4. United States.**—*M.R.*

6A–102 551.579:016

†Linsley, Ray K. (*ed.*), **Annotated bibliography on hydrology, 1941–1950, United States and Canada.** *U. S. Federal Inter-Agency River Basin Committee, Notes on Hydrologic Activities, Bulletin*, No. 5, June **1952.** 408 p. **DWB**—Annual hydrological bibliographies were published by the American Geophysical Union in accordance with standards set up by the I.U.G.G.-International Association of Scientific Hydrology, for the years 1935/1936 through 1940. Other countries published similar bibliographies. This volume covers the period from 1941–1950, when the standard publication was interrupted by the war. The entries are arranged by author, and a subject index (p. 364–408) refers to general subject or area (none smaller than a state or river basin), to specific subject and to author of paper. Many of the references are annotated briefly. Four thousand five hundred works appearing in 400 United States and Canadian journals and covering a broad area of hydrology and meteorology are listed. (*Same item as* 4.6–7, June 1953, *MAB.*) *Subject Headings:* **1. Hydrology bibliographies 2. Bibliography on hydrology 3. United States 4. Canada. I. U. S. Federal Inter-Agency River Basin Committee II. American Geophysical Union III. National Research Council, Washington, D. C.**—*M.R.*

6A–103 551.5(09)

†Queney, Paul, **Rapport sur le developpement de la météorologie dynamique aux États-Unis pendant la période 1937–1947.** [Report on the development of dynamic meteorology in the United States during the period 1937–1947.] *Annales de Géophysique*, 5(1):89–97, Jan. **1949.** 133 refs. **MH-BH**—The author lists the principal centers of meteorological research and serial publications in meteorology. The advances in dynamic meteorology are discussed under the following headings: general circulation, waves and atmospheric perturbations (large scale waves, cyclonic waves, tropical waves, relief waves) and thunderstorms. The bibliography lists general treatises, textbooks, manuals for forecasters and for aviators, and original articles. (*Same item as* 10–2, Oct. 1950, *MAB.*) *Subject Headings:* **1. Progress in meteorology 2. Bibliography on meteorology 3. United States.**—*I.L.D.*

6A–104 551.521:012

†Smithsonian Institution. Astrophysical Observatory, **Annals,** Vol. 7. Wash., D. C., Smithsonian Institution, **1954.** 184 p. figs., photos, numerous tables, bibliog. of published papers of staff members p. 180–182. **DLC**—This volume covers the period 1941–1952. It contains a summary of the activities of Astrophysical Observatory for each year of this period an account of the solar constant program since 1939, summary of solar constant data Oct. 1939–Dec. 1952, pyrheliometry (including the standard silver-disk modified Ångström and Mount Brukkaros and Mount Harqua Hala pyrheliometers and other instruments namely pyranometer, mechanical integrator for Brown potentiometer recorder and Howard photometer), an account of special studies on solar and sky radiation (giving data of daily global radiation for various stations for Miami, Florida for a two year period, statistical studies on the solar constant record (solar constant and sunspot numbers), annual variation of solar constant, relationship of pyranometry, pyrheliometry and precipitable water, ozone studies and measurement of ozone, and a bibliography of the contributions of the staff members for the period 1930–1952). *Subject Headings:* **1. Solar radiation bibliographies 2. Publication lists. 3. United States. I. Aldrich, L. B. II. Hoover, William H.**—*I.L.D.*

VII. REGIONAL AND CLIMATOLOGICAL BIBLIOGRAPHIES

6A–105 551.582:016

†Handbuch der Klimatologie, edited by W. Köppen and R. Geiger. Berlin, Gebrüder Borntraeger, **1930–** 5 v. in 17 parts. numerous figs., charts, diagrs., tables and refs. **DWB, DLC**—Basic reference work on the climatology of the world, projected in 5 volumes, some parts of which have not yet been completed (*see* 5.9–260, Sept. 1954, *MAB*). Vol. 1 deals with general climatology. Vol. 2–5 with regional climatology. Each section of this monumental series contains scores of references to material on the respective countries whose climate is analyzed in the various sections. (*Same item as* 5I–33, Sept. 1954, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology. I. Koppen, W.** (*ed.*) **II. Geiger, R.** (*ed.*).—*M.R.*

6A–106 551.311.1:016(01)

†Grier, Mary C., (*comp.*), **Bibliography on ice of the Northern Hemisphere.** *U. S. Hydrographic Office, H.O. Pub.*, 240, 1945. 179 p. 1700 refs. **DLC**—This bibliography was later issued in the U. S. Hydrographic Office, **Ice atlas of the Northern Hemisphere,** pub. as its *H.O. Publication*, No. 550, 1946. The bibliography compiled by MARY C. GRIER is one of the principal sources of literature on ice, its properties and geographical distribution, on both the continental and oceanic waters of the Northern Hemisphere. The bibliography is arranged by geographic divisions starting with world wide studies and the whole Arctic Ocean and a separate chapter for general properties and problems of ice. The references have, in many cases, short annotations. An author and subject index, an index of geographic names with coordinates and a list of periodicals with abbreviations are included. (*Same item as* 5A–111, Jan. 1954 and 5I–144, Sept. 1954, *MAB.*) *Subject Headings:* **1. Ice atlases 2. Ice bibliographies 3. Ice distribution 4. Bibliography on ice 5. Arctic Ocean 6. Northern Hemisphere. I. U. S. Hydrographic Office.**—*A.A.*

6A–107 551.5:016(98,99)

†U. S. Works Progress Administration, N. Y. City, **Annotated bibliography of the Polar Regions. Series B. Selected list of bibliographies on the Polar Regions.** New York, 1937–1939. (Pt. 1, 41 p.; Pt. 2, 27 p.) Sponsored by the Explorers Club of America. James Ferrell, Tech. Supervisor. **DLC**—Approximately 675 citations from English, German, French, Danish, Norwegian, Swedish and North American sources, dealing with geology, petrography, glaciology, paleontology, and numerous other subjects. (*Same item as* 5I–101, Sept. 1954, *MAB.*) *Subject Headings:* **1. Arctic bibliographies 2. Bibliography on the Arctic 3. Annotated bibliographies 4. Arctic 5. Antarctica. I. Ferrell, James.**—*M.L.R.*

6A–108 551.5:016

†Laursen, Vigo (*comp.*) (*Danish Met. Inst.*), **Bibliography for the Second International Polar Year, 1932–1933.** Copenhagen, I.M.O. Temporary Committee on the Liquidation of the Polar Year, 1932–33, **1951.** 253 p. **DWB**—This bibliography contains not only references about special contributions to the Polar Year 1932–1933, but also a review of regular and occasional observations made that year over all the world in meteorology, geomagnetism, atmospheric electricity, of auroras, cosmic rays and in hydrography, published or unpublished. The references are arranged according to countries and according to main subjects. No author index is included. (*Same item as* 4.1–28, Jan. 1953, 4J–210, Oct. 1953, and 5I–182, Sept. 1954, *MAB.*) *Subject Headings:* **1. International Polar Year, 1932–1933 2. Bibliography on International Polar Year, 1932–1933. I. IMO. Temporary Committee on the Liquidation of the Polar Year, 1932–1933.**—*A.A.*

6A–109 551.582(268):016

†Rice, Mary L.; Assur, Andrew and Rigby, Malcolm, **Selective annotated bibliography on the climate of the Arctic Basin.** *Meteorological Abstracts and Bibliography*, Boston, 5(9):1061–1112, Sept. **1954.** 237 refs. **DLC**—The bibliography covers the Arctic Ocean, its marginal seas and bordering coastal areas. The 237 annotated references are to general climatic studies of the Arctic Basin and to studies dealing with specific elements. The items are arranged chronologically (imprints for 1820–1954). Specific subjects and geographic areas treated will be found in a prefatory outline. Authors are indexed in Pt. IV of the Sept. 1954 issue of *MAB*. *Subject Headings:* **1. Bibliography on climatology 2. Climatology bibliographies 3. Climate of the Arctic Basin 4. Arctic Basin.**—*M.L.R.*

6A–110 551.5:06:016

†Spisok Izdaniĭ Arkticheskogo Nauchnogo Instituta 1920–1939. [List of publications of the Arctic Institute for 1920–1939.] *Problemy Arktiki*, No. 3, p. 157–184, **1940. DLC**—Nearly 300 publications are listed by series, number, author and title, with contents of those which contain several articles. Dates of publications range from 1920–1939. The list includes 49 issues of the **Trudy Severnoĭ nauchno-promyslovoĭ expeditsii;** 140 volumes of the **Trudy** of the Arctic Institute; 20 publications of the **Materialy po izucheniiu arktiki; "Arktika"** (5 vols.); **Problemy Arktiki** (19 numbers) and **Biulleten** of the Arctic Institute (55 issues). The author index lists approximately 400 authors, including such writers as V. IU. VIZE, who contributed 19 articles. (*Same item as* 5I–120, Sept. 1954, *MAB.*) *Subject Headings:* **1. Arctic bibliographies 2. Publication lists. I. Leningrad. Arkticheskiĭ Nauchno-Issledovatel'skiĭ Institut.**—*M.R.*

6A–111 551.5:016(99)

†U. S. Bureau of Aeronautics (Navy), **Antarctic bibliography.** Prepared by the U. S. Naval Photographic Interpretation Center. Washington, D. C., U. S. Govt. Print. Off., Feb. **1, 1951.** 147 p. *U. S. Office of Naval Operations, NAVAER*, 10-35-591. Price: $1.25. **DWB**—For the benefit of military and naval research analysts, geographers, explorers and scientists interested in

the problems of the Antarctic, a bibliography of 5500 items has been prepared by the Office of Naval Research. Some of the items are annotated and an author index is attached. The material is arranged according to general heads (Biological, Geophysical and Geographical Science, individual Geographical Explorations, and Miscellaneous). Under these heads the 38 subtopics are distributed. The section on Meteorology and Climatology occupies 10 pages and contains about 400 references, a section on Aurora Australis, 60 references, Oceanography, 172; Ice, 250, etc. References are listed chronologically in each section. (*Same item as* 4.6-13, June 1953, *MAB.*) *Subject Headings:* **1. Antarctic bibliographies 2. Aurora australis 3. Oceanography bibliographies. I. U. S. Naval Photographic Interpretation Center.**—*M.R.*

6A–112 551.582(265/266):016

†Kramer, Mollie P., **Selective annotated bibliography on the climatology and marine meteorology of the Pacific.** *Meteorological Abstracts and Bibliography*, 4(9):1036–1082, September **1953.** 280 refs. **DLC**—A bibliography of 280 annotated references, arranged chronologically, emphasizing the regional aspects of the climate and marine meteorology of the Pacific. General studies of the area and specific studies of its numerous island groups make up the bulk of the material. A few representative papers dealing with the bordering coasts and marginal seas of the Pacific are included. An Outline of Contents indicates the subjects covered in the bibliography. Authors are indexed in Pt. IV of the Sept. 1953 issue of *MAB. Subject Headings:* **1. Climatology bibliographies 2. Marine meteorology bibliographies 3. Bibliography on climatology 4. Bibliography on marine meteorology 5. Climate of the Pacific Ocean 6. Pacific Ocean.**—*M.L.R.*

6A–113 551.46(265/266):016

Grier, Mary Catharine (*comp.*), **Oceanography of the North Pacific Ocean, Bering Sea and Bering Strait: a contribution toward a bibliography.** *Washington. University. Publications, Library Series*, v. 2, **1941.** 290 p. **DLC**—Extensive coverage of physical oceanography and marine biology of the region. References, a few briefly abstracted, include books, magazine articles and other documents in English and foreign languages. (*Same item as* 4I–127, Sept. 1953, *MAB.*) *Subject Headings:* **1. Oceanography bibliographies 2. Bibliography on oceanography 3. North Pacific 4. Bering Sea 5. Bering Strait.**—*M.P.K.*

6A–114 551.46(265):016

†Grier, Mary C. (*comp.*), **References on the physical oceanography of the Western Pacific Ocean.** *U. S. Hydrographic Office, H.O. Publication*, No. 238, 1953. [Rev. ed.] 168 p. Price: $2.40. About 1227 refs. Includes refs. not found in 1946 edition, designated by a, b, c, etc. Item numbers missing represent deletions. References alphabetical by author, some with annotations. Subject index; also geographic names and expeditions index. **DLC**—A series on publications of bibliographic material compiled during and after World War II by The Navy Hydrographic Office and reflecting the geographical limits of the war in the Pacific. More than 1227 references in many languages, ¾ briefly annotated. Reference made to recent editions of sailing directions, pilots, tide tables and chart catalogs. The bibliography is arranged alphabetically by author with detailed subject and geographic indexes (place under subject, and subject under place.) Several hundred items are indexed under Meteorology, Weather, Wind, Fog, Smoke, etc., and hundreds of others under Currents, Waves, Swell, Temperature, etc. (*Same item as* 4I–174, Sept. 1953, and 5A–240, Jan. 1954, *MAB.*) *Subject Headings:* **1. Oceanography bibliographies 2. Bibliography on oceanography 3. West Pacific.**—*M.P.K.*

6A–115 581.05:016(96)

†Sachet, Marie-Helene and Fosberg, Francis Raymond, **Island bibliographies.** Wash., D. C., National Academy of Science—National Research Council, **1955.** 532 p. **DGS**—The volume contains three bibliographies: Annotated bibliography of micronesian botany, Bibliography of the land ecology and environment of coral atolls and Selected bibliography of vegetation of the tropical Pacific islands. The references in each bibliography are arranged alphabetically by author; a place and subject index is provided for the first two, a place index for the third. A list of serial abbreviations is included. References are to all land aspects of coral atolls (except social anthropology); climatology and meteorology are included. (*Same item as* 4I–269, Sept. 1953, *MAB.*) *Subject Headings:* **1. Ecology abstracts 2. Meteorology bibliographies 3. Coral atolls 5. Pacific Ocean.**—*M.L.R.*

6A–116 551.582(5,265.6):016

†Great Britain. Meteorological Office, **Weather in the China Seas and in the western part of the North Pacific Ocean, Vol. II, Local information.** London, **1937.** 771 p. 211 figs., 43 tables, 207 refs. Refs. arranged in subject groups, with geographical subdivisions. (*Same item as* 4E–90, May 1953, *MAB.*) **DWB**—This title contains excellent selective regional bibliography arranged

under A—General climatology, atlases, etc., B—Local climatology, C—Pressure and wind, D—Typhoons, cyclones, etc., E—Upper winds, F—Visibility, G—Cloud, H—Rain, hail and snow, I—Air temperature, J—Humidity, K—Thunderstorms, L—Daily, monthly and annual reports, logs and M.S. data (sections B-K subdivided by countries or major geographical sub-areas such as China; Philippines; Dutch East Indies; Japan, Korea and Formosa, etc.). Other titles in this series include the following: **Weather in the Indian Ocean to latitude 30°S and longitude 95°E., including the Red Sea and Persian Gulf.** 1940–1951 (*same item as* 3.6–156, June 1952 and 4E–213, May 1953, *MAB*). **Weather in the Mediterranean.** 3 v. 1936–1945 (*same item as* 2E–119, May 1951, *MAB*). **Weather of the British coasts.** 1918 (*same item as* 3I–11, Oct. 1952, *MAB*). **Weather in the Sierra Leone Peninsula.** 1946 (*same item as* 2.11–160, Nov. 1951 and 3H–176, July 1952, *MAB*). **Weather on the west coast of tropical Africa, from 20°N to 20°S including the Atlantic Ocean to 25°W.** 1949 (*same item as* 3–117, March 1950 and 3H–192, July 1952, *MAB*). *Subject Headings:* **1. Regional bibliographies 2. Climate of the Far East 3. Far East 4. China Sea 5. Northern Indonesia 6. Philippine Islands 7. Micronesia 8. Southeast Asia Coast.**—*M.R.*

6A–117 551.582(6):016

†Kramer, Harris P., **A selective annotated bibliography on the climatology of Northeast Africa.** *Meteorological Abstracts and Bibliography*, 2(10):831–865, Oct. **1951.** 254 refs. . . . **on the climatology of Northwest Africa.** *Ibid.*, 3(1):37–79, Jan. 1952. 302 refs. . . . on the **climate of Central and West Africa including the Belgian Congo.** *Ibid.*, 3(8):837–873, Aug. 1952. 214 refs. **DLC**—These 770 annotated references are to the climate of the following geographic sub-divisions of Africa: British Somaliland, Egypt, Ethiopia, Sudan, Algeria, Libya, Morocco, French West Africa, Nigeria, French Equatorial Africa, Belgian Congo, etc. Detailed outlines indicate the subject treatment for the numerous regions. A chronological arrangement is followed in each bibliography. Authors of each bibliography are indexed in Pt. IV of the issue in which the bibliography appeared. *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. Annotated bibliographies 4. Africa.**—*M.L.R.*

6A–118 5:016(5)

†**Bibliography of scientific publications of South Asia (India, Burma, Ceylon)**, no. 1, Jan./June **1949**– Latest issue seen, no. 9, Jan./June 1953. Issued by the UNESCO Field Science Co-operative Office for South Asia. **DLC**—Each issue contains a list of scientific periodicals and a list of scientific papers arranged by area and by U.D.C. No. 4 contains an alphabetical author index for the first 4 nos.; nos. 6 and 7 contain a catalog of scientific publications which have ceased to appear. *Subject Headings:* **1. Bibliography of scientific publications 2. Meteorology bibliographies 3. Southeast Asia. I. UNESCO Field Science Co-operative Office for South Asia.**—*M.R.*

6A–119 551.582(5,9):016

†Kramer, Harris P., **Selective annotated bibliography on the climate of Australia and New Zealand.** *Meteorological Abstracts and Bibliography*, 4(4):481–528, April **1953.** 281 refs. Also: Kramer, Harris P. and Martinoff, Katherine, **Selective annotated bibliography on the climate of Southeast Asia and the East Indies.** *Ibid.*, 5(2):211–269, Feb. 1954. 315 refs. **DLC**—The first bibliography contains 281 annotations of works dealing with the climate of Australia and New Zealand and their geographic sub-divisions. An outline to the subjects covered and the specific areas included is provided. The second bibliography, also annotated, includes 315 references. The areas covered are South China, Burma, French Indo-China, Malaya, Thailand, Indonesia, and the Philippine Islands; some references to contiguous areas are included. Geographic and subject outlines are provided. The items in each bibliography are arranged chronologically. Authors are indexed in Pt. IV of the issues of *MAB* in which the respective bibliographies appeared. *Subject Headings:* **1. Bibliographies on climatology 2. Climatology bibliographies 3. Australia 4. New Zealand 5. Southeast Asia 6. East Indies.**—*M.L.R.*

6A–120 551.582(55/58):016

†Kramer, Harris P., **Selective annotated bibliography on the climatology of the Near East.** *Meteorological Abstracts and Bibliography*, 2(5):373–404, May **1951.** 240 refs. Also: **Climatology of the Middle East and Central Asia.** . . . *Ibid.*, 2(6):453–480, June **1951.** 194 refs. **DLC**—The first bibliography includes 240 abstracts of papers dealing with the Near East in general as well as those dealing with specific land or sea areas, for example: Israel, Jordan, Syria and Lebanon, and Turkey, and the Mediterranean, Adriatic and Black seas. Land and sea areas are covered in the second bibliography also. The former include: Afghanistan, Arabia, Baluchistan, Iran, Iraq, Tibet and Turkistan; the latter, Arabian and Red seas and gulfs of Aden, Oman and Persia. A chronological arrangement is used in each bibliography and the authors are indexed in Pt. IV of the issues in which each bibliography appeared. Prefatory outlines indicate the subjects treated in each

bibliography. *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. Annotated bibliographies 4. Near East.**—*M.L.R.*

6A–121 551.5:016(262)

†Gleeson, Thomas A., **Bibliography of the meteorology of the Mediterranean, Middle East and South Asia areas.** Florida. State University. Dept. of Meteorology, Contract AF 19(122)-466, Scientific Report No. 1, Appendix, April 1, **1952.** 37 p. **DWB**—A concise bibliography of about 250 items giving cross sections through the regional meteorological literature for the Mediterranean Sea, Southern Europe, Northwest Africa, Northeast Africa (including Palestine, Syria, Lebanon), Southwest Asia, India, Indian Ocean, Burma and Siam based on the main American and British meteorological sources. Many of the references are annotated. The material is arranged alphabetically by author under each of the 8 regions specified. (*Same item as* 5.2–20 and 5B 292, Feb. 1954, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. Mediterranean area 4. Middle East 5. Africa 6. Southeast Asia. I. Florida. State University. Dept. of Meteorology II. Contract AF 19(122)-466.**—*A.A.*

6A–122 551.582:016(8)

†De Le Vin, Margaret Morris (Welsh), **Bibliography on the climate of South America.** *Monthly Weather Review, Supplement*, No. 18, **1921.** 42 p. **DWB, DLC**—A classified bibliography of more than 1000 entries. Includes references to material on South America as a whole, to each country and to the Guianas and the Falkland Islands, with the section devoted to Brazil being the most extensive. Climatology, meteorology and allied fields are covered. Earliest imprint is 1714, latest 1919. Sources are in English, French, Spanish, Portuguese and Italian. The numerous, brief annotations are in English. (*Same item as* 3C-8, March 1952, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. South America.**—*M.L.R.*

6A–123 551.582(82,892,899):016

†Rice, Mary L., **Selective annotated bibliography on the climates of Paraguay, Uruguay and Argentina.** *Meteorological Abstracts and Bibliography*, 3(3):243–289, March **1952.** 250 refs. **DLC**—References to works on the climate of South America, the Rio de la Plata region and Paraguay, Uruguay and Argentina. The 254 items are annotated and are alphabetically arranged by author under each of the five areas listed above. A prefatory outline of subjects covered in the bibliography is arranged according to these geographic divisions. All authors and subjects are indexed in Pt. IV of the March 1952 issue of *MAB. Subject Headings:* **1. Bibliographies on climatology 2. Climatology bibliographies 3. Argentina 4. Paraguay 5. Uruguay.**—*M.L.R.*

6A–124 551.582(65):016

†Seltzer, P., **Le climat de l'Algérie.** [The climate of Algeria.] Algiers, Université, Institut de Météorologie et de Physique du Globe, Travaux, Hors Série, **1946.** 219 p. 2 maps, 53 figs., 56 tables, numerous refs. p. 212–218. **NN**—Here is the most comprehensive and detailed study of Algerian climate found; the essentials are organized and analyzed, as extracted from the numerous different observations series on Algerian climate in the past 30 years. Each climatic element is taken up at length, thoroughly discussed with extensive observations tabulated. Included along with chapters on the usual elements are chapters on evaporation, solar and terrestrial radiation, cloud conditions, insolation, thunderstorms, sirocco, hail, snow, sleet and fog. The place of the climate of Algeria in the picture of North African climate as a whole is considered. An extensive bibliography is included, divided by subject as follows: periodicals, observational series and separate reports, general descriptions, regional works, and individual studies on medical climatology, precipitation, etc. and climatic changes. (*Same item as* 3A–260, Jan. 1952, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliographies 3. Climate of Algeria 4. Algeria.**—*H.P.K.*

6A–125 551.582.99:016(82)

†Sparn, Enrique, **Bibliografía meteorológica y climatológica de la República Argentina. Con un apéndice: Literatura sobre meteorología y climatología de las regiones Antárctica y Sub-antárctica Americanas.** [Meteorology and climatology bibliography of the Argentine Republic. With an appendix: Literature on the meteorology and climatology of the Antarctic and sub-Antarctic American regions.] *Córdoba, Argentina. Universidad Nacional, Revista*, 10(4/6):91–160, June/Aug. **1923. DLC.—Bibliografia meteorológica y climatológica de la República Argentina . . . 1924–1931.** *Ibid.*, 20(9/10):277–319, Nov./Dec. 1933. **DLC.—Tercera contribución . . . 1941–1948.** *Academia Nacional de Ciencias, Córdoba, Boletin*, 38(3/4):379–414, 1949. **DSI, DLC**—Over 1200 references, some annotated, on meteorology, climatology and related fields comprise the bibliography. Works deal with the country as a whole, various provinces and cities, the Falkland Islands and the Antarctic. Items are arranged alphabetically by author. Geographic and sys-

tematic indexes are provided for parts of the bibliography. (*Same item as* 3C–236, –237, –238, March 1952, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. Argentina.**—*M.L.R.*

6A–126 551.506.3(234.3) 551.582(232.3)

†Steinhauser, Ferdinand, **Die Meteorologie des Sonnblicks. I Teil. Beiträge zu Hochgebirgsmeteorologie nach Ergebnissen 50-jähriger Beobachtungen des Sonnblick-Observatoriums, 3106 m.** [The meteorology of the Sonnblick. Pt. I. Contributions to high mountain meteorology from results of 50-year observations of the Sonnblick Observatory 3106 m.] Vienna, J. Springer, **1938.** 180 p. plate, figs., tables, bibliog. p. 176–178. **DWB**—Detailed review in *Meteorologische Zeitschrift*, 55:448–454, 1938. Mainly tables of daily averages and frequencies of the various elements for 1887 through 1936, based on observations at 7, 14, 21 h and autographic records. Monthly means and aggregates are given in Appendix. (*Same item as* 2K–210, Nov. 1951, *MAB.*) *Subject Headings:* **1. Mountain meteorology 2. Long period records 3. Sonnblick, Austria.**—*C.E.P.B.*

6A–127 551.582:016(674)

†Leplae, Edmond, **Observations et publications météorologiques au Congo Belge.** [Meteorological observations and publications on the Belgian Congo.] *Belgium. Institut Royal Colonial Belge, Bulletin des Séances*, 9(1):179–215, **1932.** 3 figs., tables, numerous refs. **NNA**—Important listings and reviews of meteorological work done on Belgian Congo are presented beginning in 1878 (some with annotations), providing an excellent source of early works (most of which are not included in the present bibliography). Earliest observations are listed by region. Later ones appear in chronological order and are briefly summarized. Notes on founding and development of stations are included. (*Same item as* 3H–68, Aug. 1952, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. Belgian Congo.**—*H.P.K.*

6A–128 551.582(81):016

†Barros Paiva, Tancredo de (*comp.*), **Bibliographia do clima brasilico.** [Bibliography of Brazilian climate.] Rio de Janeiro, Ministerio da Agricultura, Industria e Commercio, **1928.** 34 p. Arranged alphabetically by author. **DLC**—Approximately 850 references, chiefly to Brazilian, English and German sources, dealing with the climate of Brazil as a whole as well as various cities and provinces. *Subject Headings:* **1. Bibliography on climatology 2. Climatology bibliographies 3. Brazil.**—*M.L.R.*

6A–129 551.582(664,667,669):016

†British West Africa. Meteorological Services, **Bibliography of publications relating to the meteorology of British West Africa.** Lagos, [**1954**]. 14 p. Mimeo. **GB-MO**—Complete lists in alphabetical order, with titles but no abstracts, of the published and MS material available in the Headquarters library at Lagos. (*Same item as* 6.1–296, Jan. 1955, *MAB.*) *Subject Headings:* **1. Bibliography on meteorology 2. West Africa.**—*C.E.P.B.*

6A–130 551.5(09)

†Britton, C. E., **A meteorological chronology to A. D. 1450.** *Great Britain. Meteorological Office, Geophysical Memoirs*, 8(70), **1937.** 177 p. bibliog. p. 164–176. **DLC**—Chronologies, histories, chronicles and general works were used as sources. The 29 chronologies are chiefly in English, including such works as SHORT's **A general chronological history of the air, weather, seasons, meteors, etc.** (1749) and LOWE's **Natural phenomena; and chronology of the seasons** (1870). Six foreign works are included. Approximately 230 histories, chronicles and general works were also examined. The bulk of these, in English and Latin, includes: **Anglo-Saxon Chronicle** (1861); BEDE's **Historia Ecclesiastica Gentis Anglorum** (Eng. trans., BOHN, 1907); CASE's **Annals of Ireland** (1886); **Chronicles of Picts and Scots** (1867); THOMSON's **Introduction to meteorology** (1849); STOW's **The annales or general chronicle of England** (with HOWE's additions) (1615). JULIUS CAESAR in his **De Bello Gallico** provides the earliest authentic reference to weather in or around the British Isles. (*Same item as* 4J–242, Oct. 1953, *MAB.*) *Subject Headings:* **1. Chronology 2. Bibliography on meteorology 3. Auroras.**—*M.L.R.*

6A–131 551.582:016

†Fantoli, Amilcare, **Bibliografia meteorologica delle colonie italiane e delle isole italiane dell'Egeo.** [Meteorological bibliography of the Italian colonies and of the Italian islands of the Aegean.] *Rassegna Economica delle Colonie*, 20(7/8):779–792, **1932.** Extensive refs. **NNA**—List is largely the same as that in *Ibid.*, 17(9/10):979–988, Sept./Oct. 1929, in which about 200 references going back to 1802 are arranged alphabetically for each region (Tripolitania and Cyrenaica) with no annotations. However, the 1932 list includes references to other Italian colonies as well and a few

more recent articles. (*Same item as* 3A–132, Jan. 1952, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. Tripolitania 4. Cyrenaica 5. Italian East Africa 6. Italian Aegean Islands.**—*H.P.K.*

6A–132 551.5:016(612.3)

†Fàntoli, Amilcare, **Le pioggie della Libia, con particolare reguardo alle zone di avvolaramento.** [Rainfall in Libya, with special emphasis on the arable zones.] Rome, Ministero dell' Africa Italiana, Ispettorato Meteorologico, **1952.** 582 p. photos, diagrs., tables, refs. Meteorological bibliography on Libya and adjacent regions, p. 513–521. Review in: *Rivista di Meteorologia Aeronautica*, 12(3):38–39, 1952. **DWB**—A magnificient climatological study, consisting of 180 pages of detailed tables (by regions and stations), >300 pages of descriptive and analytical material (including many charts, photos, tables and graphs) and approximately 300 references (arranged by country). (*Same item as* 4.10–4, Oct. 1953, *MAB.*) *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. Libya.**—*M.R.*

6A–133 551.582:016(931)

†Dacre, J. C., **Climatology and meteorology of the New Zealand area: a bibliography.** (In: Garnier, B. J. (*ed.*), **New Zealand weather and climate.** Christchurch, N. Z., Whitcomb and Tombs, **1950.** p. 141–147.) Reprinted with additions from the *New Zealand Geographer*, 3(2):129–136, Oct. **1947. DLC**—Sources of data and information on New Zealand weather and climate are listed in several categories: (1) Publications of: Meteorological Office, Wellington, (2) New Zealand Journal of Science and Technology, (3) Transactions of New Zealand Institute, (4) New Zealand Journal of Agriculture and (5) geological bulletins, official gazettes, year books and miscellaneous publications. Lists 142 publications which, although unannotated, make a valuable reference source for climatologists, meteorologists and geographers. (*Same item as* 3.5–256, May 1952, *MAB.*) *Subject Headings:* **1. Bibliography on climatology 2. Climatology bibliographies 3. Climate of New Zealand 4. New Zealand.**—*M.R.*

6A–134 551.582(54):016

†Ghani, A. R. (*Librarian, Fazl-I-Omar Research Institute, Model Town, Lahore*), **Pakistan: a select bibliography.** Lahore, Pakistan Assoc. for the Advancement of Science, University Institute of Chemistry, **1951.** 339 p. **DWB**—p. 19–22: **Climate.** p. 266–268: **Climate.** Sections cited above as headed "Climate" contain about 120 references to articles on climate and weather of India and Pakistan, but with emphasis on those embracing East and West Pakistan and slanted toward climatological material. Sections on Baluchistan, Kashmir, natural resources, agriculture, etc. also contain items of interest to climatologists. *Subject Headings:* **1. Climate of Pakistan 2. Climate of India 3. Bibliography on the climate of Pakistan 4. Pakistan.**—*M.R.*

6A–135 551.582:016(85)

†Indacochea G., Angel J., **Bibliografía climatológica del Perú.** [Bibliography on the climatology of Peru.] *Instituto Geológico del Peru, Boletín* No. 4, **1946.** 81 p. **DWB**—Approximately 750 unannotated items arranged alphabetically by author. Citations to material on the usual phases of meteorology as well as to material on hydrology, economic geography, agricultural meteorology, glaciology, oceanography and other related subjects. The majority of the references are to literature written in the Spanish language; a few are to references in English or German. (*Same item as* 2.10–156, Oct. 1951, *MAB.*) *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on climatology 3. Peru.**—*M.L.R.*

6A–136 551.5:016(68)

†Gamble, John G., **Catalogue of printed books and papers relating to South Africa. Pt. II, Climate and meteorology.** Cape Town, **1885.** iv, xi p. **DWB**—Listed by author and by journal. *Subject Headings:* **1. Bibliography of scientific publications 2. Bibliography on meteorology 3. South Africa.**

6A–137 551.582(494):016

†Billwiller, Robert August (*1849–1905*), **Climatologie.** [Climatology.] Berne, K. J. Wyss Erben, **1927.** 16-140-9 p. (*Bibliographie Nationale Suisse*, Fasc. 4, Pt. 4, 1927.) Foreword signed R. Billwiller, Zurich, May 1927. Table of contents and Foreword in German and French. Notations in German. Alphabetical by author under subject divisions and subdivisions. Includes 1920 imprints. Appendix: Maurer, J., **Erdmagnetismus.** [Terrestrial magnetism.] 9 p. 57 refs. **DLC**—This unannotated bibliography contains a history of and catalog of meteorological observations in various parts of Switzerland from the earliest times to date of publication, and a bibliography on the organization of meteorological observatories in Switzerland, one on publications and manuscripts on history of meteorology and on historical weather events, one on climate and a

detailed subject breakdown of the various meteorological elements, including acoustics, optics electricity and aerology. Finally, a bibliography on climatic changes, glacier variations, snow lin and soil temperature, and terrestrial magnetism. Most of the material applies to Switzerland, bu on some subjects (i.e., föhn) studies of neighboring regions are considered applicable. *Subject Headings:* **1. Climatology bibliographies 2. Bibliography on the climate of Switzerland 3. Switzerland.**—*M.R.*

6A–138 91:016(47)

†U. S. Library of Congress, **Soviet geography. A bibliography. Pt. 1, U.S.S.R., Geography by subject.** Wash., D. C., **1951.** 342 p. 2441 refs. (Pt. 2, titles grouped under the administrative natural and economic regions to which they apply.) **DLC**—In section V (Physical geography) 55 items from Soviet sources are listed under the heading Climatology and Meteorology (p. 97–104) and about the same number under Hydrography and Waters of the Lands, and Oceanography, respectively. *Subject Headings:* **1. Bibliography on Soviet geography 2. Soviet geography bibliographies 3. Meteorology bibliographies. I. Rodionoff, Nicholas R.** (*ed.*).—*M.R.*

VIII. MISCELLANEOUS BIBLIOGRAPHIES HAVING BROAD COVERAGE

6A–139 551.5:016

†Great Britain. Meteorological Office, **A selected bibliography of meteorological literature, 1901–1935,** compiled by C. E. P. Brooks. Its *M.O.M.*, No. 358, March **1939.** 151 p. Mimeo. **DWB**—This bibliography includes about 1500 unannotated references to meteorological literature published during 1901–1935 and regarded as of considerable permanent importance or as classics. They are classified according to section 551.5 of the U.D.C. classification adopted in 1936. Some references to terrestrial magnetism and other subjects related to meteorology are added. *Subject Headings:* **1. Meteorology bibliographies 2. Bibliography on meteorology 3. U.D.C. bibliographies. I. Brooks, C. E. P. B.** (*comp.*).—*C.E.P.B.*

6A–140 551.5:06:016

†Compendium of Meteorology, ed. by THOMAS F. MALONE. Prepared under the direction of the Committee on the Compendium of Meteorology: H. R. Byers, H. E. Landsberg, H. Wexler, B. Haurwitz, A. F. Spilhaus, H. S. Willett, H. G. Houghton (*chairman*). Boston, American Meteorological Society, **1951.** 1334 p. charts, graphs, tables, refs. and bibliogs. Price: $12.00. **DWB**—The purpose of the **Compendium** is to make a detailed survey by subjects or to "take stock of the present position of meteorology . . . to summarize and appraise the knowledge . . . and to indicate the avenues of further study and research . . . to extend the frontiers of our knowledge." The 108 articles by 102 authors are divided into 25 sections according to the following broad subject headings: 1) Composition of the Atmosphere, 2) Radiation, 3) Meteorological Optics, 4) Atmospheric Electricity, 5) Cloud Physics, 6) Upper Atmosphere, 7) Cosmical Meteorology, 8) Dynamics of the Atmosphere, 9) General Circulation, 10) Mechanics of Pressure Systems, 11) Local Circulation, 12) Observations and Analysis, 13) Weather Meteorology, 18) Marine Meteorology, 19) Biological and Chemical Meteorology, 20) Atmospheric Pollution, 21) Clouds, Fog and Aircraft Icing, 22) Meteorological Instruments, 23) Laboratory Investigations, 24) Radiometeorology and 25) Microseisms. The references accompanying each article have been carefully edited, making the volume an excellent bibliographic source. An 18 page (3 column) subject index is provided. (*Same item as* 3.3–1, March 1952, *MAB.*) *Subject Headings:* **1. Meteorology 2. Compendium of Meteorology 3. Bibliography on meteorology 4. Progress in meteorology. I. American Meteorological Society, Committee on the Compendium of Meteorology. II. Malone, Thomas F.** (*ed.*) **III. U. S. Air Force. Cambridge Research Center. Geophysics Research Division.**—*M.R.*

6A–141 551.5(02):016

†Landolt, Hans H. and Börnstein, Richard, **Zahlenwerte und Funktionen aus Physik, Chemie, Astronomie, Geophysik und Technik.** [Tables and equations in physics, chemistry, astronomy, geophysics and technology.] 6th ed. Edited by Arnold Eucken. Berlin, Springer, **1950–52.** v. 3, **Astronomie und Geophysik.** [Astronomy and geophysics.] pub. **1952.** Prepared by Georg Joos; edited by Julius Bartels and Paul ten Brüggencate. 795 p. figs., tables, charts, bibliogs. **DWB, DLC**—This invaluable reference work contains several thousand references to important literature arranged according to each separate subject represented in the tables. For instance, there are over a thousand references to various aspects of oceanography and nearly as many on hydrology and hydrography, hundreds on climatology (by regions) and climatic changes, scores on atmospheric electricity, auroras, atmospheric tides, radiation and other pertinent subjects. A list of 354 serial geophysical publications with names of editors or publishers, period of publication, etc. is appended. (*Same item as* 4.4–9, April 1953, *MAB.*) *Subject Headings:* **1. Geophysical**

periodical lists 2. Subject bibliographies 3. Bibliographies on meteorology. I. Eucken, Arnold, (*ed.*) **II. Joos, Georg,** (*ed.*) **III. Bartels, Julius,** (*ed.*) **IV. Ten Brüggencate, Paul,** (*ed.*).—*M.R.*

6A–142 551.5(02):016

†Hann, Julius von, **Hann-Süring Lehrbuch der Meteorologie.** [Hann-Süring textbook on meteorology.] 5th ed., completely rev. Leipzig, W. Keller, **1939–1951.** 2 v. 1092 p. numerous figs, tables, refs. and eqs. (1st Lieferung, 1937; 11th and final Lieferung, 1951). **DLC**—The chief value of the **Hann-Süring Lehrbuch** is not its usefulness as a textbook, but as a handbook because of its thousands of references, and citations and illustrative tables of data (organized in a logical and easily usable manner) which exhaustively treat of every theoretical and practical phase of meteorology. (*Same item as* 3.9–6, Sept. 1952, *MAB.*) *Subject Headings:* **1. Meteorology textbooks 2. Meteorology bibliographies 3. Handbooks.**—*M.R.*

6A–143 551.583:016

†Arctowski, Henryk (*comp.*), **A bibliography of scientific papers on climatic variations.** Lwow, June **1938.** 254 p. Mimeo. At head of t-p: International Geographic Union. Commission of Climatic Variations. **DLC**—Contains 4153 references selected from about 20,000 compiled by the author from periodicals and catalogs in libraries of Lwow, London, Paris, Berlin, Florence and New York, with contributions from H. H. Clayton, H. V. Sverdrup and E. Van Everdingen, arranged chronologically under each of about 200 subject headings covering every aspect of climatic variations and a number of distantly (as well as closely) related subjects. For instance, carbon dioxide, visibility, atmospheric absorption, climate and crops, cosmic radiation, föhn fog, hail, ionosphere, dust, ozone, pyrheliometry, thunderstorms, tornadoes, and zodiacal light are among the subjects included. *Subject Headings:* **1. Bibliography on meteorology 2. Climatic variation bibliographies.**—*M.R.*

6A–144 551.5:016

†Hellmann, Gustav, **Contribution to the bibliography of meteorology and terrestrial magnetism in the Fifteenth, Sixteenth and Seventeenth centuries.** 43 p. At head of t-p: Extract from Part II of the Report of the Chicago Meteorological Congress, Aug. **1893,** p. 352–394. **DLC**—Contains list of bibliographic sources of 19th century. Author index of 277 works from 15 countries in 8 languages. Chronological index. Subject index. *Subject Headings:* **1. Meteorology bibliographies 2. Terrestrial magnetism bibliographies.**—*M.R.*

6A–145 551.5:016

†Zoch, Richmond T. (*comp.*), **Brief list of works on meteorology.** *Monthly Weather Review,* Wash., D. C. 68(1):1–4, Jan. **1940. DLC**—Contains over 200 references to textbooks, handbooks and other works of general interest, classified according to the following headings: Popular and elementary works, General treatises, Clouds, Dynamic meteorology, Weather and weather forecasting, Aeronautical meteorology, Agricultural meteorology, Atmospheric electricity, Frost, Instruments, etc., Marine meteorology, Storms, Miscellaneous, Climatology, Climatography, Leading Meteorological Journals and Meteorology in relation to stream flow. The bibliography was revised by R. C. Aldredge, with title **Selected bibliography on meteorology and related subjects,** and issued by U. S. Weather Bureau Library, Jan. 20, 1943. 31 p. There were a few additions and deletions. Neither bibliography was annotated. **DWB.** *Subject Headings:* **1. Meteorology textbooks 2. Bibliography of meteorology textbooks. I. Aldredge, R. C.** (*comp.*).

6A–146 551.5:016

†Blodget, Lorin, **Catalogue of works on atmospheric physics and climatology [in] Library of Lorin Blodget.** [Phil. **1894.**] 23 p. Reprinted from the *American Philosophical Society, Proceedings,* v. 32, Jan. 16, 1894. **DWB, DLC**—A chronologically arranged list of over 250 important works dating from 1635 to 1891. Most of the works are in the English language, but a few in German or French. Several references to the author's own works on agricultural climatology, climate of Alaska, etc., are included. *Subject Headings:* **1. Bibliography on the history of meteorology 2. Catalogs of private meteorology libraries 3. Meteorology bibliographies.**—*M.R.*

6A–147 551.509.2:016(02)

†Namias, Jerome and others, **Introduction to the study of air mass and isentropic analysis.** 5th rev. & enl. ed. with contributions by Tor Bergeron, Bernhard Haurwitz, Graham Millar, Albert K. Showalter, Robert G. Stone and Hurd C. Willett. Ed. by Robert G. Stone. Milton, Mass., American Meteorological Society, Oct. **1940.** 232 p. numerous figs. p. 176–227, Stone, Robert G., **Bibliography for synoptic meteorologists.** Previous editions of this work (1st, Sept. 1934; 4th, Oct. 1938) appeared under the title **"Introduction to the study of air mass analysis." DWB**—As a supplement to Namias' classic work on air mass and isentropic analysis, Robert Stone prepared a

fairly comprehensive bibliography of about 2000 books and articles dealing directly or indirectly with air mass, synoptic or upper air analysis, both theoretical and applied, and from various countries, though there is heavy leaning toward German and English sources. The 10 major sections are (A) General works, Textbooks, etc. in general synoptic, dynamic and physical meteorology; (B) Meteorological physics (radiation, ozone and icing); (C) Mechanics and dynamics of atmosphere and theory of cyclones and anticyclones; (D) Climatological and statistical works on the upper atmosphere, circulation, air masses, etc.; (E) Special aids to synoptic analysis and forecasting; (F) Historical development; (G) Detailed case studies (synoptic) by regions; (H) Meso- and microaerological analysis (turbulence, mountain and microclimatology); (I) Moisture (clouds, precipitation, fog, etc.) and (J) Instrumental problems. The material is well proportioned as to the various parts of the globe, and is divided into 3 chronological parts for each of the major regions (i.e., North Atlantic and Caribbean into 1927 and earlier, 1928–34, and 1935–39). Some 1940 material is included. English, French and German titles are not translated. A few of the more remarkable works are briefly annotated. *Subject Headings:* **1. Bibliographies on meteorology 2. Synoptic meteorology bibliographies 3. Isentropic analysis 4. Textbooks. I. Stone, Robert G.** (*ed.*) **II. Bergeron, Tor III. Haurwitz, Bernhard IV. Graham Millar, F. V. Showalter, Albert VI. Willett, Hurd C.**—*M.R.*

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The contents of periodicals included in this section are for information only and will not be listed in the monthly indexes until abstracted. When material is furnished in advance of date of publication, the pagination may be omitted.

American Meteorological Society, Bulletin, Volume 35, Number 9, November 1954.

Bolton, J. G. and Qureshi, N. A.: **The effect of air temperature and pressure on the decay of silver iodide,** p. 395–399.

Beall, James M.: **A proposal for a revitalized agricultural meteorological service,** p. 400–403.

Ramage, C. S.: **Non-frontal Crachin and the cool season clouds in the China Seas,** p. 404–411.

Radok, Uwe: **A procedure for studying mountain effects at low level,** p. 412–416.

Winchester, James W.: **A study of the movement of Arctic Sea in the Canadian Arctic in relation to meteorological, geographical and oceanographic parameters,** p. 417–427.

Sekiguti, Takeshi: **Progress of climatology in Japan,** p. 428–432.

The 34th Annual Business Meeting, January 27, 1954, p. 433–436.

Falconer, Raymond F. and Schaefer, Vincent J.: **Cloud atmospheric-electric observations of the formative stages of the Worcester, Massachusetts, Tornado,** p. 437–440.

American Meteorological Society, 134th National Meeting, December 28–30, 1954, p. 441–448.

Annali di Geofisica, Volume 7, Number 2, April 1954.

Hardwig, E.: **Oberflächenwellen in energieverzehrenden Medien,** [Damping waves in energy absorbing media], p. 144–193.

De Francesco, S.: **Note intorno al teorema de Shannon,** [Note on the Shannon theorem], p. 194–207.

Malurkar, S. L.: **Geomagnetic variations and diurnal range of atmospheric ozone,** p. 209–220.

Malurkar, S. L.: **The solar flare effect at Alibag on June 13th, 1951,** p. 215–220.

Mosetti, F.: **Principi sui filtri per le onde microbariche,** [Principal filters applicable to a microbaric wave], p. 221–239.

Della Croce, N.: **Lanci de galleggianti per lo studio delle correnti superficiali nei bacini Ligure e Terrenico,** [Floating bottles to study surface currents in the basins of Ligurian and Terrenian seas], p. 241–279.

Atmosfera zemli. Sbornik. [Earth's atmosphere. Symposium.] Moscow, Gosud. Izdat. Kul'turno-Prosvetitel'noĭ Literatury, 1953.

Atmosfera i solntse, [Atmosphere and sun.]

Dzerdzeevskiĭ, B. L.: **Stroenie zemnoĭ atmosfery,** [Atmospheric structure], p. 7–76.

Kalitin, N. N.: **Luchi solntsa,** [Solar radiation], p. 77–112.

Khrgian, A. Kh.: **Svetovye iavleniia v atmosfere,** [Optical phenomena in the atmosphere], p. 113–140.

Pogoda i klimat, [Weather and climate.]

Gal'tzev, A. P.: **Pogoda i ee predskazanie,** [Weather and its forecasting], p. 143–188.

Vize, B. IU.: **Arktika i Afrika,** [The Arctic and Africa], p. 189–192.

Chubukov, L. A.: **Pogoda i klimat,** [Weather and climate], p. 193–214.

Sapozhnikova, C. A.: **Chto proiskhodit u samoĭ zemli,** [What happens at the ground], p. 215–240.

Rabota vetra, [Work of the wind.]

Fedorovich, B. A.: **Tvoreniia vetra na zemle,** [Action of wind on soil], p. 241–254.

Belinskiĭ, N. A.: **Veter, volny and navodneniia,** [Wind, waves and inundations], p. 255–292.

Karmishin, A. B.: **Ispol'zovanie energii vetra,** [Use of wind power], p. 293–315.

Vozdukh i zhizn', [Air and life.]

Shcherbinovskiĭ, N. S.: **Rol' i znachenie atmosfery v organicheskoĭ zhizni zemli,** [The role and significance of the atmosphere in organic life of the earth], p. 319–342.

Kassil', G. N.: **Chelovek i vozdukh,** [Man and air], p. 343–360.

Gol'din, M. I.: **Mikroby v vozdukhe,** [Microbes in the air], p. 361–371.

Bogatstvo zemnoĭ atmosfery, [Wealth of the earth's atmosphere.]

Gamburg, D. IU.: **Bogatstvo nedr vozdushnogo okeana,** [Mineral resources of the air ocean], p. 375–422.

Australian Journal of Physics, Melbourne, Volume 6, Number 3, September 1953.

Christiansen, W. N. and Warburton, J. A.: **The distribution of radio brightness over the solar disk at a wavelength of 21 centimetres. II. The quiet sun—one dimensional observations,** p. 262–271.

Mills, B. Y. and Little, A. G.: **A high-resolution aerial system of a new type,** p. 272–278.

Priestley, C. H. B.: **Buoyant motion in a turbulent environment,** p. 279–290.

Weiss, A. A.: **The structure of the F region of the ionosphere,** p. 291–303.

Number 4, December 1953.

Bolton, J. G. and Slee, O. B.: **Galactic radiation at radio frequencies. V. The sea interferometer,** p. 420–433.

Bolton, J. G., Slee, O. B. and Stanley, G. J.: **Galactic radiation at radio frequencies. VI. Low altitude scintillations of the discrete sources,** p. 434–451.

Mills, B. Y.: **The radio brightness distributions over four discrete sources of cosmic noise,** p. 452–470.

Darby, J. F., Hopper, V. D., Laby, Jean E. and Wilson, A. R. W.: **Flight characteristics of expansible balloons,** p. 471–479.

Newstead, G. and Beck, A.: **Borehole temperature measuring equipment and the geothermal flux in Tasmania,** p. 480–489.

Bowen, E. G.: **The influence of meteoric dust on rainfall,** p. 490–497.

Volume 7, Number 1, March 1954.

Bolton, J. G., Westfold, K. C., Stanley, G. J. and Slee, O. B.: **Galactic radiation at radio frequencies. VII. Discrete sources with large angular widths,** p. 96–109.

Bolton, J. G., Stanley, G. J. and Slee, O. B.: **Galactic radiation at radio frequencies. VIII. Discrete sources at 100 Mc/s between declinations +50 and −50°,** p. 110–129.

Shain, C. A. and Higgins, C. S.: **Observatios of the general background and discrete sources of 18.3 Mc/s cosmic noise,** p. 130–149.

Baird, K.: **High multiple radio reflections from the F_1 layer of the ionosphere at Brisbane,** p. 165–175.

Priestley, C. H. B.: **Convection from a large horizontal surface,** p. 176–201.

Priestley, C. H. B.: **Vertical heat transfer from impressed temperature fluctuations,** p. 202–209.

Number 2, June 1954.

Jacklyn, R. M.: **The barometer coefficient and air mass effects on cosmic rays at Macquarie Island,** p. 315–321.

Cornish, E. A.: **On the secular variation of rainfall at Adelaide,** p. 334–346.

Swinbank, W. C. and Martyn, D. F.: **Comments on a paper by E. G. Bowen entitled "The influence of meteoric dust on rainfall,"** p. 354–363.

Number 3, September 1954.

Godfrey, G. H.: **Optical diffraction effects produced by amplitude and phase changes in the wave front,** p. 389–390.

Officer, V. C. and Eccles, P. J.: **The residual range of delayed particles in extensive air showers,** p. 410–422.

Moroney, J. R. and Parry, J. K.: **Momentum distribution and charge ratio of μ-mesons at zenith angles in the east-west plane,** p. 423–438.

Wild, J. P., Murray, J. D. and Rowe, W. C.: **Harmonics in the spectra of solar radio disturbances,** p. 439–459.

Higgins, C. S. and Shain, C. A.: **Observations of cosmic noise at 9.5 Mc/s,** p. 460–470.

Major, G.: **The association of pulsating and flaming auroras with complete ionospheric absorption at Macquarie Island,** p. 471–476.

Jacka, F.: **Variations of intensity of the aurora at Macquarie Island,** p. 477–484.

Hemel en Dampkring, Volume 52, Number 11, November 1954.

Van der Ham, C. J.: **De straalstroom,** [On the jet stream], p. 201–210.

Wallengquist, A. A. E.: **De Zweedse eclipsexpeditite naar Gotland,** [Second eclipse-expedition to Gotland], p. 211–213.

Het weer in september 1954, [The weather in September 1954], p. 219–220.

International Union of Geodesy and Geophysics. Association of Meteorology, Brussels, 1951, Proces-Verbaux des séances. Memoires et discussions. (Proceedings of the meetings. Memoirs and discussion), Publication AIM Number 9/c, December 1953.

Presidential Address.

Bjerknes, J.: **The maintenance of the zonal circulation of the atmosphere,** p. I–XXIII.

Symposium sur la circulation générale des océans et de l'atmosphère, [Symposium on general circulation of the oceans and atmosphere.]

Sverdrup, H. U.: **A la mémoire de Vilhelm Bjerknes (1862–1951),** [In memory of Vilhelm Bjerknes, 1862–1951], p. 1–8.

Rossby, C.-G.: **A comparison of current patterns in the atmosphere and in the ocean basins,** p. 9–30.

Palmén, E.: **On the meridional transport of angular momentum due to large-scale atmospheric eddies and meridional circulations,** p. 32–34.

Hesselberg, Th.: **On the role of the water vapour in the general circulation,** p. 35–36.

Flohn, H.: **Studies on trade-wind circulation and equatorial westerlies,** p. 37–44.

Scherhag, R.: **The cellular structure of the general circulation,** p. 45.

Queney, P.: **Ondes atmosphériques associées aux discontinuités du tourbillon. Application aux ondes planétaires et aux ondes de cyclone,** [Atmospheric waves association with turbulence discontinuities. Application to planetary waves and to cyclone waves], p. 46.

Charney, J. G.: **On baroclinic instability and the maintenance of the kinetic energy of the westerlies,** p. 47–63.

Priestley, C. H. B.: **A survey of the stress between the ocean and atmosphere,** p. 64–69.

Hidaka, Koji: **Drift currents in an enclosed ocean (Part III),** p. 70.

Hidaka, Hoji: **Circulation in a zonal ocean induced by a planetary wind system,** p. 71.

Charnock, H.: **Stress of the wind on the sea surface,** p. 71.

Van den Dungen, F. H., Cox, J. F. and Van Mieghem, H.: **Les fluctuations saisonnières de la rotation du globe terrestre et al circulation atmosphérique générale,** [Seasonal fluctuation in the rotation of the globe and in general atmospheric circulation], p. 72–75.

McVittie, G. C.: **Development, thickness patterns and the equivalent barotropic atmosphere,** p. 76–77.

Raethjen, P.: **The five types of vorticity-variation and cyclogenesis,** p. 78–80.

Du Jonchay, I., and Mironovitch, V.: **Les courants aériens de l'hémisphère sud,** [Atmospheric currents in the Southern Hemisphere], p. 81–85.

Bessemoulin, J.: **Difluence et divergence,** [Diffluence and divergence], p. 86.

Deporto, M.: **The isopycnic level and the coupling of tropopause and surface waves,** p. 87–97.

Azpiroz Yoldi, Miguel: **Sobre flujo horizontal en la atmosfere,** [On horizontal flux in the atmosphere], p. 98–102.

Freeman, J. C., Bailey, J. F. and Byers, H. R.: **Analysis on the development and maintenance of squall lines,** p. 103.

Pone, R.: **Résultats provisoires d'une méthode d'analyse en altitude utilisée en France,** [Provisional results of a method used in France for analyzing altitude], p. 104–105.

Lysgaard, Leo: **Diminutive cold domes in upper air pressure levels, the weather and the number, of radio-sounding stations,** p. 106.

Arakawa, H.: **Aerological analysis of a mature typhoon,** p. 106.

Berlage, H. P.: **Solar activity and air pressure fluctuations over the South Pacific Ocean** p. 107–112.

Tetrode, P.: **Long-range forecasts of almost unprecedented temperature-excesses in the Netherlands,** p. 113–119.

Bergeron, Tor: **General survey in the field of cloud physics,** p. 120–134.

Symposium sur la physique des nuages, [Symposium cloud physics.]

Bergeron, Tor: **General survey in the field of cloud physics,** p. 120–134.

Bowen, E. G.: **Radar observations of rain and mechanisms of rain formation,** p. 135–136.

Kiveliovitch, M. and Rouleau, J.: **Evolution des gouttes d'eau,** [Evolution of raindrops], p. 137.

Froessling, N.: **Contribution to a discussion about drops changing in size,** p. 138–139.

Mason, B. J.: **The production of rain and drizzle by coalescence in layer clouds,** p. 140–141.

Ludlam, F. H.: **The natural and artificial production of showers,** p. 142–148.

Brewer, A. W.: **Ice nuclei for rain formation,** p. 149.

Dessens, Henri: **Expériences de modification des nuages dans les Pyrénées,** [Experiences in cloud modification in the Pyrenees], p. 149.

Gunn, Ross: **A pressurized shaft for the study of artificial clouds and precipitation mechanics,** p. 150.

Ogiwara, Sekiji: **On the solid condensation nuclei insoluble in water,** p. 150.

Ito, Kyojo: **On skeleton-shaped depth hoar,** p. 151.

Ito, Kyojo: **On ice crystals in the air,** p. 151.

Dufour, L.: **Sur la condensation de la vapeur d'eau dans l'atmosphère,** [Condensation of water vapor in the atmosphere], p. 152.

Azpiroz Yoldi, M.: **La afinidad en procesos termodinamicos de interes meteorologico,** [Affinity in thermodynamic processes of meteorological interest], p. 152.

Viaut, A.: **Contribution à l'étude de la structure des perturbations,** [Contribution to the study of the structure of perturbations], p. 153–154.

Bergeron, T.: **Quantitative synoptic studies of precipitation,** p. 155.

Communications diverses, [Various communications.]

Jansa Guardiolo, Jose Maria: **Le sondage horizontal et le diagramme synoptique spacio-temporel,** [Horizontal soundings and the synoptic space-time diagram], p. 156.

Jansa Guardiolo, Jose Maria: **Quelques applications du nombre de Mach dans quelques formules de dynamique atmospherique,** [Some applications of Mach's number in some formulae of atmospheric dynamics], p. 156.

Jansa Guardiola, Jose Maria: **La dynamique apparente de la météorologie synoptique,** [Apparent dynamics of synoptic meteorology], p. 157.

Jansa Guardiola, Jose Maria: **La méthode d'amortissement appliquée à la météorologie,** [Amortizing method applied to meteorology], p. 157.

Said-Ali, Prof.: **Über die Möglichkeit der Wettervorhersage auf Grund der Leitfähigkeitsmessung der Luft,** [Weather forecasting based on air conductivity measurement], p. 158–163.

Bernasconi, G. and Bossolasco, M.: **Le barovariographe comme appareil de sondage aérologique,** [Barovariograph as an aerological sounding instrument], p. 163.

Väisälä, V.: **A new method of radio direction finding designed especially for the Finish (Väisälä) radiosonde,** p. 164–166.

Climatologie, [Climatology.]

Dixon, F. E.: **The annual precipitation at Dublin, Ireland,** p. 167–184.

Hare, F. K.: **"Recent researches on snow and sea-ice distribution in the Eastern Canadian Arctic,"** p. 185.

Thomas, M. K.: **Diurnal variations of precipitation frequency in Canada,** p. 185.

Jordt, H. J.: **The air temperature at the French ice-cape station in Greenland and the temperature in the free air,** p. 186.

Schove, D. Justin: **South steering of pressure fluctuations A.D. 1850–1950,** p. 187.

Schove, D. Justin: **The Little Ice Age A.D. 1550–1850,** p. 188–189.

Schove, D. Justin: **Past rainfall and future temperatures,** p. 190.

Schove, D. Justin: **Tree-rings and northern summers,** p. 191.

Schove, D. Justin: **The chronology of meteorological phenomena,** p. 192.

Schove, D. Justin: **The preliminary reduction of early barometric and wind data,** p. 193.

Deacon, E. L.: **Climatic change in Australia, 1880–1940,** p. 194–197.

Symposium sur la physique de la Haute Atmosphère et de l'ionosphère, [Symposium on physics of the upper atmosphere and ionosphere.] (Titles of papers only).

Whipple, Fred L.: **Results of rocket and meteor research.**

Roach, F. E. and Pettit, Helen B.: **Recent studies of the diurnal variations of the upper atmosphere emissions 5577 and 6300 (oxygen) and 5893 (sodium).**

Singer, S. Fred, Maple, E. and Bowen, W. A., Jr.: **Evidence of ionospheric currents from rocket experiments near the geomagnetic equator.**

Vegard, L.: **Experimental results of auroral research.**

Chapman, S.: **The aurora.**

Bates, D. R.: **Basic reactions in the upper atmosphere.**

Dieminger, W.: **Ueber Echolotungen der Ionosphäre bei schrägen Einfall,** [On echosonic fathometer measuring of ionosphere in the case of slanting incidence.]

Clay, J.: **Ion balance in the atmosphere.**

Symposium sur le rayonnement, [Symposium on radiation.]

Angström, Anders: **Introduction to the symposium on radiation,** p. 199–200.

Fritz, S.: **The average reflection, absorption and transmission of solar radiation through clouds,** p. 201.

Ramdas, L. A.: **Studies on the infra-red radiation from the atmosphere at Poona, India,** p. 202–206.

Robinson, G. D.: **The role of radiation in the transfer of heat from ground to air,** p. 206.

Mörikofer, W.: **The determination of the radiation balance of the earth,** p. 207–215.

Götz, F. W. Paul and Volz, Fr.: **The blue sun of September 1950,** p. 216–219.

Eldridge, R. H.: **A comparison between sub-standard pyrheliometers,** p. 220.

Gowan, E. H.: **Solar radiation in various wavelength ranges,** p. 221–224.

Tousey, R., Johnson, F. S., Purcell, J. D. and Watanabe, K.: **The intensity of sunlight from 2000 to 3400 Å,** p. 225.
Feussner, K.: **Über die effektive Ausstrahlung,** [On the effective radiation], p. 226–231.
Keränen, J.: **Preliminary report on night frost investigation and frost-preventing methods in Finland,** p. 232–234.
Symposium sur la micrométéorologie, [Symposium on the micrometeorology.]
Sutton, O. G.: **Opening address,** p. 235–236.
Swinbank, W. C.: **The measurement of the vertical transfer of heat, water vapour and momentum by eddies in the lower atmosphere,** p. 237–242.
Poppendiek, H. F.: **A periodic heat transfer analysis for an atmosphere in which the eddy diffusivity varies sinusoidally with time and linearly with height,** p. 243–252.
Shappard, P. A.: **The vertical transfer of momentum in the atmosphere by turbulence,** p. 253–254.
Davies, D. R.: **An approach to the problem of evaporation from a limited area,** p. 255–262.
Ramdas, L. A.: **Micrometeorology in India,** p. 263–264.
Venkiteshwaran, S. P. and Jayarajan, A. P.: **Observations of turbulence in the upper air with the F-type radiosonde,** p. 265–266.
Frenkiel, F. N.: **Application of the statistical theory of turbulence to micrometeorology,** p. 267–294.
Björgum, Oddvar: **On the velocity, temperature and humidity distributions in the lower atmosphere over level ground under steady conditions,** p. 295–298.
Brabtree, J. and Pasquill, F.: **A current study of the scattering of smoke in the first few hundred feet of the atmosphere,** p. 299.
Charnock, H.: **Note on eddy diffusion in the atmosphere between one and two kilometres,** p. 299.
Schnelle, Fritz: **Überwachung des Wasserhaushaltes des Bodens durch den Deutschen Wetterdienst in der US-Zone,** [Supervision of water conservation of soil by German Weather Bureau in US-Zone], p. 300–302.
Symposium sur l'ozone atmosphérique du 30 aout au 1 septembre, [Symposium on atmospheric ozone August 30–September 1.]
Dobson, G. M. B.: **Introductory remarks,** p. 303–304.
Chapman, S.: **The photo-chemical theory of atmospheric ozone,** p. 305–306.
Götz, F. W.: **Vertical distribution of ozone,** p. 307–308.
Normand, Sir Charles: **The synoptic study of ozone and meteorological conditions,** p. 309–310.
Regener, E.: **Ozon in der Troposphäre,** [Ozone in the troposphere], p. 311.
Tönsberg, E.: **Ozone in high latitudes,** p. 312–314.
Tousey, R., Watanabe, K., Purcell, J. D. and Johnson, F. S.: **The vertical distribution of ozone to 70 km,** p. 315.
Walton, G. F.: **The vertical distribution of ozone,** p. 316–322.
Dütsch, H. U.: **The photochemical theory of the atmospheric ozone as a means of investigating turbulence and circulation in the lower stratosphere,** p. 323–332.
Paetzold, H. K.: **Über die Möglichkeit der Benutzung von Mondfinsternissenerfassung der vertikalen Ozonverteilung in verschiedenen Breiten,** [Use of lunar eclipse in investigation of different widths of vertical ozone distribution], p. 333–336.
Reed, Richard J. and Julius, Anthony L.: **A quantitative analysis of two proposed mechanisms for vertical ozone transport in the lower stratosphere,** p. 337.
Brewer, A. W.: **The variations of ozone and water vapour concentrations. The value of observations,** p. 338–345.
Gowan, E. H.: **The temperature of the ozonosphere if the main absorption is from 4,000 degree sun,** p. 346–348.
Gowan, E. H.: **The measurement of atmospheric ozone at Edmonton, Canada,** p. 349–350.
Fritz, Sigmund: **Ozone measurements during sudden ionospheric disturbances,** p. 351–359.
Ehmert, Alfred: **Gleichzeitige Messungen des Ozongehaltes bodennaher Luft an mehreren Stationen mit einem einfachen absoluten Verfahren,** [An absolute simple method for simultaneous measurement of ozone content in the layer near the ground air, by more stations], p. 360–371.
Ungeheuer, H.: **Über die Beziehungen des bodennahen Ozons zu atmosphärischen Vorgängen,** [On the relation of ozone near the ground to atmospheric processes], p. 372–376.
Miyake, Y. and Sarunashi, K.: **On the annual and meridional variation of the atmospheric ozone,** p. 376.
Kay, R. H.: **Some observations on the temperature-sensitive Huggins absorption bands of atmospheric ozone,** p. 377–383.
Dobson, G. M. B., Normand, C. W. B. and Kay, R. H.: **The determination of atmospheric ozone by measurement on moonlight,** p. 384–388.

Vigroux, M.: **Les coefficients d'absorption de l'ozone,** [Absorption coefficients of ozone], p. 389–393.
Langer, R. M.: **The combined absorption of oxygen and ozone,** p. 394–399.
Dobson, G. W. B.: **Summary,** p. 400–401.
Notes on a few of the discussions, p. 402–405.

Le problème du microséisme, [Problems concerning microseisms.] (Titles of papers only).
Bath, M.: **The distribution of microseismic energy with special reference to Scandinavia.**
Bath, M.: **L'importance microséismique des fronts froids in Scandinavie,** [Importance of microseisms of cold fronts in Scandinavia.]
Wadati, K., Inonye, W. and Hirono, T.: **On the relation between typhoon and microseisms.**
Bernard, P.: **Microséismes à Saint-Michel en Provence,** [Microseisms in Saint-Michel Province.]
Caloi, P.: **Sull'origine dei microsismi che interessano l'alto Adriatico,** [On the origin of microseisms over Adriatic sea.]
Giorgi, J. **Sull'origine dei microsismi che interessano il Mediterraneo centrale,** [On the origin of microseisms over Central Meditirranean.]
Bossolasco, M.: **Les microséismes à Gênes,** [Microseisms at Genoa.]

Le problème de l'évaporation à la surface du globe, [Problem of the evaporation from the surface of the globe.] (Titles of papers only).
Volker, A.: **L'évaporation du Lac Yssel,** [Evaporation from Lake Yssel.]
Langbein, W. B.: **Research on evaporation from lakes and reservoirs.**
Grundy, F.: **Some notes on evaporation from water and land surface.**
Pennman, H. L.: **The water balance of catchment areas.**
Bergsten, F.: **Contribution to the study of evaporation in Sweden.**
Renqvist, H.: **Evaporation recorders.**
Lyshede, J. M.: **Evaporation and transpiration in North Sealand.**
Ostromecki, J.: **Evaporation from the surface of meadows on loam;**
Sörgen, R.: **Indirect computation of real precipitation and evaporation.**
Sanderson, M.: **The measurement of evaporation in Canada.**
Bossolasco, M.: **Sur l'évaporation à la surface de la mer; Sur l'hydrologie du foehn,** [Evaporation from the surface of sea; On hydrology of föhn.]

International Union of Geodesy and Geophysics. Association of Terrestrial Magnetism and Electricity, Brussels, Aug. 21–Sept. 1, 1951. Transactions. Ed. by J. W. Joyce. Its IATME Bulletin, No. 14, 1954.

Part I—Agenda and Minutes, p. 1–65.
Part II—Statutes, p. 67–72.
Part III—National Reports:
Argentina. Servicio Meteorologico Nacional: **Informe de actividades geomagneticas desarrolladas en la Division Geofisica del Servicio Meteorologico Nacional, periodo comprendid entre el 1 de enero de 1948 y el 1 de marzo de 1951,** [Report on geomagnetic activities of the Geophysical Division of the National Meteorological Service, between Jan. 1, 1948 and March 1, 1951], p. 73–76.
Rayner, J. M.: **Summary statement of the magnetic survey of Australia during the years 1948–51,** p. 76–78.
Australia. Radio Research Board: **Report of researches of magnetic variations and the ionosphere (1948–51),** p. 79–82.
Lahaye, Edmond: **Rapport sur l'activité scientifique en magnétisme et électricité terrestres pendant la période 1949–1951,** [Report on scientific activity in magnetism and terrestrial electricity during 1949–1951], p. 83–86.
Madill, R. G.: **Progress Report of the Division of Terrestrial Magnetism, Dominion Observatory, 1948–1950,** p. 87–89.
Currie, B. W.: **Progress report on atmospheric ionization in Canada, 1948-1951,** p. 89–97.
Egedal, J.: **Report on magnetic work in the years 1948–1950,** p. 98–99.
Arley, Niels: **Report on the magnetic measurements in connection with the Danish Deep Sea Expedition round the world 1950–52,** p. 99–100.
Suckdorff, E.: **Report of the Finnish National Committee, 1948–1951,** p. 101-102.
Thellier, E.: **Rapport de la Section de Magnétisme et Électricité Terrestres sur les travaux de 1948 à 1951,** [Report of the Section of Magnetism and Terrestrial Electricity on its activities 1948–1951], p. 103–115.
Errulat, F.: **Germany—Rapport général,** [General Report], p. 116–130.
British National Report on terrestrial magnetism and electricity 1949–1951, p. 131–145.

Pramanik, S. K.: **Report on work on geomagnetism, atmospheric electricity, ionosphere and cosmic rays during the period 1949-1951,** p. 146-148. **Report of work on terrestrial magnetism. Ireland,** p. 149–150.
Morosini, Luigi: **Rapport sur l'activité de l'Institut Géographique Militaire Italien, pour le magnetisme terrestre pendant les vingt dernières années,** [Report on the activity of the Italian Military Geographic Institut in terrestrial magnetism during the last 20 years], p. 150–155.
Hasegawa, M.: **Japanese National Report, prepared by the Committee of Terrestrial Magnetism and Electricity of the National Committee for Geodesy and Geophysics,** p. 156-178.
Bidault, G.: **Rapport national Maroc,** [National report on Morocco], p. 179-180.
Veldkamp, J.: **Report on geomagnetic and ionospheric work during the years 1948-1951,** p. 181.
Beagley, J. W.: **Department of Scientific and Industrial Research, Christchurch Geophysical Observatory,** p. 182–184.
Braid, H. F.: **Magnetic survey of New Zealand,** p. 184–187.
Giesecke, A. A., Jr.: **Geophysical Work in Peru,** p. 187–188.
de Guzman, Avelino, D.: **Geomagnetic work in the Philippines,** p. 189–190.
Kalinowska, Z.: **Report on geophysical work for the period 1949–1950,** p. 190-191.
Rodrigues-Navarro de Fuentes, Jose: **Rapport nation Espagne,** [National report on Spain], p. 192–196.
Norinder, Harald: **Report on work in terrestrial magnetism and atmospheric electricity since the Oslo Assembly,** p. 197–200.
Alfvén, Hannes: **Investigations in geophysics and cosmical physics carried out in the Department of Electronics, Royal Institute of Technology, Stockholm,** p. 200–202.
Ambolt, Nils: **Report from the Earth Magnetic Section of the Royal Hydrographic Office (Kungl. Sjökarteveket), Stockholm, Sweden,** p. 202–204.
Rydbeck, Olof: **Report from the Section of Geophysics of the Research Laboratory of Electronics, Chalmers University of Technology, Gothenburg, Sweden,** p. 204–206.
Molin, Kurt: **Report on researches of (a) isoporic zero-lines for horizontal magnetic intensity in Sweden, (b) the occurrence of time of the minimum value of the inclination in Sweden,** p. 207.
Lugeon, Jean: **Mésures d'électricité atmosphérique au Jungfraujoch,** [Measurement of atmospheric electricity on the Jungfraujoch], p. 208–209.
Progress of work in geomagnetism, 1948–1950 (and) in atmospheric electricity, 1949-1951. Union of South Africa, p. 210–214.
Alldredge, L. R.: **Report of the section of terrestrial magnetism and electricity of the American Geophysical Union,** p. 215–221.

Part IV—Special Reports:

Fleming, Jno. A.: **Report of Committee on Selection of Sites of New Observatories for terrestrial magnetism and electricity,** p. 222–227.
Störmer, Carl: **Report of the Auroral Committee,** p. 228.
Housman, W. B.: **Auroral frequency, British Islands, 1948-1949, 1950,** p. 229.
Hawkins, G. S.: **Observations of the aurora borealis by radio methods at the Jodrell Bank Experimental Stations of the University of Manchester,** p. 229–234.
Auroral observation in the Netherlands, 1948, 1949, 1950, p. 234.
New Zealand auroral work, 1948–1951, p. 234–235.
Vegard, L.: **On auroral spectroscopy and properties of the ionosphere,** p. 235–242.
Störmer, Carl: **Report on work on aurora in Southeastern Norway during 1948, 1949, and 1950,** p. 242–245.
Observations of aurora in Scotland, p. 247–248.
Brunberg, Ernst-Ake: **Aurora observations with an infrared telescope,** p. 248.
Kaplan, Joseph: **Laboratory studies related to the physics of the upper atmosphere,** p. 249-253.
Meinel, A. B.: **Report on auroral studies in the red and infrared regions from 1948 to 1951,** p. 253–254.
Vestine, E. H.: **Report of Committee on magnetic secular variation stations,** p. 255–263.
Vestine, E. H.: **Report of Committee on magnetic charts,** p. 263–264.
Olsen, J.: **Report of the Committee on registration of giant pulsations,** p. 264–265.
Bartels, J.: **Report of Committee on methods of observatory publications,** p. 265–266.
Laursen, V.: **Report of the Committee to promote international comparisons of magnetic standards,** p. 267–271.
McComb, E. H.: **Report of Committee on observational technique,** p. 271–272.
McComb, H. E.: **Application of alignment charts of the design of magnetic variometer suspension systems,** p. 272–274.
Bartels, J.: **Report of Committee on characterization of magnetic disturbances,** p. 274–283.

Roberts, Elliott B.: **Report of Committee on centralization and standardization of records** p. 284–285.

Egedal, J.: **Report of Committee to promote observations of daily variation of the horizontal magnetic force between and near the geographic and magnetic equators, 1948–1951,** p. 286–291.

Joyce, J. W.: **Report of the Committee on magnetic airborne surveys,** p. 291–296.

Chapman, S.: **Joint Committee on the associations of meteorology and terrestrial magnetism and electricity on the study of lunar variations in meteorological, magnetic and electrical elements.** (Text not included), p. 296.

Laursen, V.: **Report of the temporary commission on the liquidation of the Polar Year, International Meteorological Organization. The Liquidation of the International Polar Year 1932–33,** p. 297–298.

Part V—Communications:

Physics of the high atmosphere and the ionosphere. Joint meetings with the International Association of Meteorology, p. 299–301.

Upper atmosphere and ionosphere, p. 311.

Atmospheric and terrestrial electricity, cosmic rays, and solar and terrestrial relationships, p. 312.

Romañá, A. and Cardús, J. O.: **Determination of the moon's influence on the earth currents by the Chapman-Miller method,** p. 312.

Hughes, H.: **The electrical conductivity of the earth's mantle,** p. 313–314.

Hee, A.: **Centres radioactifs dans des composés du fer,** [Radioactive centers of iron compounds], p. 315.

Part VI—Resolutions and Committees, p. 317–327.

Part VII—Addresses, p. 329–340.

Journal of Agricultural Meteorology, Tokyo, Volume 9, Number 2, March 1954.

Tanaka, M.: **Practical studies on the injuries of cool weather in rice plants (VII),** p. 41–44.

Hanyu, J. and Yamada, K.: **Yamase-wind at Hachnohe from the agricultural meteorological standpoints,** p. 45–48.

Inoue, K. and Ohta, I.: **On the results of the meteorological observation on the denuded mountain of the Setonai-kai district,** p. 49–52.

Mano, H. and Okazaki, G.: **Sudden increase of nocturnal temperatures in valleys or basins,** p. 53–55.

Maruyama, E. and Yamamoto, Y.: **On the role of the bambooblades as a windbreak in farm field,** p. 56–58.

Tsuboi, Y. and Nakagawa, Y.: **Study on the relation between the microclimatic characteristics and the growth of rice plant,** p. 59–62.

Tani, N.: **On the mechanism and effect of shelter-hedge,** p. 63–65.

Tanaka, S., Tanizawa, T. and Kodera, S.: **Studies on the wind in front and back of the shelter-hedges (2),** p. 66–68.

Kusakave, K.: **On the seasonal variation of soil moisture,** p. 69–71.

Journal of Atmospheric and Terrestrial Physics, London, Volume 5, Number 5/6, November 1954.

Sagalyn, Rita Callahan and Faucher, Gerard A.: **Aircraft investigation of the large ion content and conductivity of the atmosphere and their relation to meteorological factors,** p. 253–272.

Beynon, W. J. G. and Davies, K.: **Simultaneous ionospheric absorption measurements at widely separated stations,** p. 273–289.

Skinner, N. J. and Wright, R. W.: **F_2-layer regularities at Ibadan,** p. 290–297.

Gardner, F. F.: **Ionospheric thermal radiation at radio frequencies. II. Further observations,** p. 298–315.

Shain, C. A. and Mitra, A. P.: **Effects of solar flares on the absorption of 18.3 Mc/s cosmic noise,** p. 316–328.

Bates, D. R. and Dalgarno, A.: **Theoretical considerations regarding the dayglow,** p. 329–344.

Nolan, Patrick J.: **The disappearance of condensation nuclei in a sealed room: Remarks on a paper by Smith and Schilling,** p. 345–346.

Barber, D. R.: **Note on the seasonal variation of sodium D-line emission in twilight,** p. 347–348.

Appleton, Edward V.: **The anomalous equatorial belt in the F_2-layer,** p. 348–351.

Marine Observer, Volume 25, Number 167, January 1955.

Extracts from Admiral FitzRoy's first report, p. 5–8.
Early synoptic charts, p. 9–10.
Hay, R. F. M.: **Some landmarks in meteorological progress. Part I,** p. 11–15.
Parkhurst, P. G.: **Ocean meteorology,** p. 15–20.
Old-time Marine Observer's log, p. 21–24.
Notes on early observing ships, p. 25.
Marine Observer's Log—January, February and March, p. 26–37.
South African Weather Bureau—excellent awards, p. 38.
Weather reporting in South-West Pacific, p. 39.
Honourable Company of Master Mariners, p. 40.
The Association of Navigation Schools, p. 41.
Institute of Navigation, p. 42.
Shipping operations in Hudson Bay, p. 43.
Book reviews:
The way of a ship, p. 44.
Teach yourself motor-boating, p. 45.
Alow and aloft, p. 46.

Meteorological Magazine, London, Volume 83, Number 989, November 1954.

Memorial tablets at Kew Observatory, p. 321–322.
Sutton, O. G.: **World Meteorological Organization. Fifth session of the Executive Committee,** p. 322–325.
Graystone, P.: **Estimation of mean winds and standard deviations at high levels,** p. 325–239.
Goldsmith, P.: **Some aircraft and surface meteorological observations made at Khartoum in July 1952,** p. 329–334.
Hurst, G. W.: **Aerial observation of total solar eclipse June 30, 1954,** p. 335–337.
Taylor, A. P.: **Radio-sonde ascents during the solar eclipse June 30, 1954,** p. 337–338.
Miles, M. K.: **Influence of a quasi-stationary long-wave pattern on small-scale thermal features,** p. 338–341.
Murgatroyd, R. J.: **Meteorological meetings of the fifth Congress of the Organisation Scientifique et Technique internationale du Vol à Voile,** p. 343–344.
Remarkable temperature variations and fog formation over snow at Stornoway, February 8, 1954, p. 344–347.
Graystone, P.: **Atmospheric electricity and jet streams,** p. 347.
Pressure changes associated with supersonic bangs, p. 348.

Number 990, December 1954.

Snow survey of Great Britain, p. 353–358.
Goldie, N.: **Probability paper and its applications in upper air climatology,** p. 359–367.
Wallington, C. E.: **World Gliding Championships,** p. 368–369.
Sawyer, J. S.: **International Union of Geodesy and Geophysics,** p. 371.
International Symposium on Experimental Meteorology, p. 374.
Definition of dry and wet periods, p. 375.
Crispin, P. R.: **Hail from clear sky,** p. 377.
Brown, P. R.: **Indian Ocean oceanographic and meteorological data,** p. 378.
Jenkinson, A. F.: **Trewartha, G. T.—An introduction to climate,** p. 379.

Meteorologiske Annaler, Oslo, Volume 3, Number 7, 1951.

Økland, H.: **On the ageostrophic motion of fronts,** p. 191–204.

Number 8, 1952.

Åmot, Audvin: **On forecasting of air temperature for the Southwest-Norwegian coastal areas,** p. 205–224.

Number 9, 1953.

Evjen, Sigurd: **Number and directions of cyclones passing Norway and the Norwegian Sea,** p. 225–255.

Number 10, 1953.

Hisdal, Vidar: **The influence of weather and mortality,** p. 257–283.

Number 11, 1953.

Hesselberg, Th.: **Some notes on the atmospheric eddy movements and friction,** p. 285–293.

Number 12, 1953.

Haug, Odd: **On the theory of superior mirage,** p. 295–310.

Monthly Weather Review, Volume 82, Number 8, August 1954.

MacDonald, T. H. and Foster, Norman B.: **Pyrheliometer calibration program of the U. S. Weather Bureau,** p. 219–227.

Winston, Jay S.: **The weather and circulation of August 1954,** p. 228–236.

Holleyman, J. B. and Hand, J. M.: **The successive pressure jump lines of August 16, 1954,** p. 237–244.

Brewster, George F.: **Observation of two squall lines, August 16, 1954,** p. 245–247.

Number 9, September 1954.

Hanson, Donald M.: **A possible quantitative use of mean circulation concepts in daily forecasting,** p. 249–254.

Newstein, Herman: **Tornado-pressure jump line situation of March 18, 1954,** p. 255–256.

Schroeder, Mark J.: **Verification of "probability" fire-weather forecasts,** p. 257–260.

Winston, Jay S.: **The weather and circulation of September 1954,** p. 261–266.

Malkin, William and Holzworth, George C.: **Hurricane Edna, 1954,** p. 267–279.

Przegląd Meteorologiczny i Hydrologiczny, Warsaw, Volume 6, Number 1/2, 1953.

Mackiewicz, Maria: **Rozkład przestzenny insolacji w Polsce,** [The spatial distribution of insolation in Poland], p. 5–15.

Chomicz, Kazimierz: **O pokrywie śnieżnej w Karpatach,** [The snow cover in the Carpathians], p. 16–29.

Paszyński, Janusz: **Opady atmosferyczne dorzecza Odry i ich związek z zalesieniem,** [The precipitation of the Odra basin and its relationship to afforestation], p. 30–46.

Połońska, Maria: **Klimat Raciborza,** [The climate of Ratibor], p. 47–60.

Mitosek, Henryk: **Przymrozki wiosenne 1951 roku w okolicy Puław i szkody przez nie wyrządzone,** [Late frosts in spring 1951 and damage inflicted in the environs of Pulawy], p. 61–70.

Michalczewski, Jerzy: **Fronty wtórne z dnia 23. V. 1950,** [Secondary fronts of 23rd May 1950], p. 71–78.

Michalczewski, Jerzy: **Przyczynek do znajomości rozmieszczenia inwersji w obszarach wyżowych,** [Contribution to the knowledge of distribution of an inversion in high-pressure areas], p. 79–80.

Orlicz, Michał: **O niektórych zjawiskach optycznych obserwowanych na Kasprowym Wierchu,** [On some optical phenomena observed at the Kasprowy Wierch Observatory], p. 81–88.

Paryski, Witold H.: **Klimat południowej Puna de Atacama,** [The climate of the southern Puna de Atacama], p. 89–109.

Brodniewicz, A.: **Znaczenie katatermometrii w klimatologii lekarskiej,** [The importance of katathermometry for medical climatology], p. 110–117.

Wężyk, J.: **Deszczomierz do sygnalizowania i notowania opadów 5 lub 10 mm,** [Raingauge for signalizing and recording precipitation of 5 and 10 mm], p. 118–121.

Cebulak, Kazimierz: **Wyrównanie krzywej konsumpcyjnej,** [Equalizing of the flow curve], p. 122–131.

Royal Meteorological Society, Quarterly Journal, Volume 80, Number 346, October 1954.

Corby, G. A.: **The airflow over mountains. A review of the state of current knowledge,** p. 491–521.

Gunn, K. L. S. and East, T. W. R.: **The microwave properties of precipitation particles,** p. 522–545.

Panofsky, Hans A. and McCormick, Robert A.: **Properties of spectra of atmospheric turbulence at 100 metres,** p. 546–564.

Scrase, F. J.: **Radiation and lag errors of the Meteorological Office radiosonde and the diurnal variation of upper-air temperature,** p. 565–578.

Jones, R. F.: **Radar echoes from lightning,** p. 579–582.
Moore, D. J. and Mason, B. J.: **The concentration, size distribution and production rate of large salt nuclei over the oceans,** p. 583–590.
Kraus, E. B.: **Secular changes on the rainfall regime of SE Australia,** p. 591–601.
Glover, J., Robinson, P. and Henderson, J. P.: **Provisional maps of the reliability of annual rainfall in East Africa,** p. 602–609.
Gregory, S.: **Annual rainfall areas of southern England,** p. 610–618.
Darlington, C. R.: **The distribution of wave heights and periods in ocean waves,** p. 619–626.
Rogers, M. H.: **A note on computed transports of angular momentum in a theoretical model of the general circulation,** p. 627–628.
Scorer, R. S.: **Turbulence generated in standing waves,** p. 629–630.
Munro, R. C.: **A simple mechanism to improve the sensitivity of a Dine anemograph,** p. 635.
Scorer, R. S.: **O.S.T.I.V. 1954; Meteorology and gliding,** p. 631–634.
Davies, D. R.: **A note on the two-dimensional equation of diffusion in the atmosphere,** p. 635.
Mordy, W. A. and Eber, L. E.: **Observations of rainfall from warm clouds,** p. 636–637.
East, T. W. R. and Marshall, J. S.: **Turbulence in clouds as factor in precipitation,** p. 638–640.
Langleben, M. P.: **The terminal velocity of snowflakes,** p. 640–642.
Godson, W. L.: **The evaluation of infra-red radiative fluxes due to atmospheric water vapour,** p. 644–646.

Tellus, Stockholm, Volume 6, Number 3, August 1954.

V. W. Ekman in memoriam, p. 201.
Stommel, H.: **Serial observations of drift currents in the Central North Atlantic Ocean,** p. 203–214.
Arrhenius, G.: **Origin and accumulation of aluminosilicates in the ocean,** p. 215–220.
Kullengberg, B.: **On the presence of sea water in the Baltic ice-lake,** p. 221–228.
Burt, W. V.: **Specific scattering by uniform minerogenic suspensions,** p. 229–231.
Alfvén, H.: **On the origin of cosmic radiation,** p. 232–253.
Brunberg, E.-Å. and Dattner, A.: **Variations of the cosmic ray intensity during magnetic storms,** p. 254–259.
Lundquist, S.: **A note on the variation of cosmic ray intensity produced by an electric field,** p. 260.
Emanuelsson, A., Eriksson, E. and Egnér, H.: **Composition of atmospheric precipitation in Sweden,** p. 261–267.
Starr, V. P.: **Commentaries concerning research on the general circulation,** p. 268–272.
Phillips, N. A.: **Energy transformations and meridional circulations associated with simple baroclinic waves in a two-level, quasi-geostrophic model,** p. 273–286.
Mather, J. R.: **The present climatic fluctuation and its bearing on a reconstruction of pleistocene climatic conditions,** p. 287–301.
Eriksson, E.: **Report on an informal conference in atmospheric chemistry held at the Meteorological Institute, University of Stockholm,** p. 302–307.

Weather, London, Volume 9, Number 11, November 1954.

Forsdyke, A. G.: **Synoptic meteorology in the tropics—a general survey,** p. 327–334.
Riehl, Herbert: **Variations of energy exchange between sea and air in the trades,** p. 335–340.
Palmer, C. E.: **The general circulation between 200 mb and 10 mb over the equatorial Pacific,** p. 341–349.
Poulter, R. M.: **Cloud sequency over Cyprus,** p. 351.
Burgess, C. R.: **Commander J. Hennessy, M.B.E., R.D., R.N.R.,** p. 355.
Bhalotra, Y. P. R.: **Barograph antics,** p. 355.
Kraus, E. B.: **Flying saucer?** p. 356.

Number 12, December 1954.

Wood, C. A.: **A midwinter night's scheme,** p. 359–367.
Laycock, P. A.: **The summer weekends of 1954,** p. 368–371.
Bonacina, L. C. W.: **British birds in the weather scene,** p. 372–373.
King, C. A. M.: **The University of Nottingham South-East Iceland Expedition, 1953, Part III,** p. 374–379.
Climatic fluctuation and the solar cycle, p. 379–380.

PART IV. AUTHOR AND SUBJECT INDEX

In this section will be found reference to the number given at the head of each abstract or entry. In Part I each entry begins with 6.1–, and in Part II in the Bibliography of Bibliographies each entry begins with 6A–. This index is divided into three parts:

Index of Authors Index of Subjects Index of Geographical Locations

INDEX OF AUTHORS

Åmot, Audvin, 6.1–107
Aeronautical Engineering Review, 6A–9
Agricultural Index, 6A–10
Aguilar y Santillán, Rafael, 6A–90
Aichele, Heinz, 6.1–57, 6.1–320
Akademiia Nauk SSSR, 6A–31
Albertson, M. L., 6.1–260
Albrecht, F., 6.1–69
Albright, John G., 6.1–165
Aldredge, R. C., 6A–145
Aldrich, L. B., 6A–104
Ali, F. M., 6.1–272
Almeyda Arroyo, Elías, 6.1–261
American Chemical Society, 6A–19
American Geographical Society, N. Y., 6A–11
American Geological Institute, 6A–24
American Geophysical Union, 6.1–12, 6.1–260, 6A–41, 6A–102
American Institute of Electrical Engineers, 6A–30
American Institute of Physics, 6A–56
American Meteorological Society, Boston, 6A–7, 6A–42
American Physical Society, 6A–30, 6A–56
American Society of Mechanical Engineers, 6A–12, 6A–20
Anderson, Charles E., 6.1–12
Anderson, W., 6.1–113
Aniol, Rudolf, 6.1–277
Annalen der Hydrographie und Maritimen Meteorologie, Hamburg, 6A–53
Annalen der Physik, 6A–21
Applied Mechanics Reviews, Easton, Pa., 6A–12
Arakawa, H., 6.1–46
Arctic Bibliography, Wash., D. C., 6A–13
Arctic Institute of North America, 6A–13
Arctowski, Henryk, 6A–143
Argentina. Servicio Meteorológico Nacional, 6A–49, 6A–62
Armstrong, G. R., 6.1–13
Ashmore, S. E., 6.1–339
Association de Géographes Français, 6A–15
Assur, Andrew, 6A–109
Atmosfera zemli. Sbornik, 6.1–1
Aurén, T. E., 6.1–160
Aus dem Archiv der Deutschen Seewarte, Hamburg, 6A–59
Australia. Meteorological Branch, 6A–63
Aviacão, Rio de Janeiro, 6.1–177
Aviation Age, N. Y., 6.1–26

B—, K. F., 6.1–220
Baden-Powell, D. F. W., 6.1–303
Bagge, E., 6.1–304
Balchin, W. G. V., 6.1–295
Barros Paiva, Tancredo de (*comp.*), 6A–128
Barghoorn, Elso S., 6.1–305
Bartels, Julius, 6A–83, 6A–141
Batchelor, G. K., 6.1–193
Bauer, F., 6.1–91
Baum, Werner A., 6A–101
Beebe, Robert G., 6.1–58
Behrmann, W., 6.1–306
Beiträge zur Physik der freien Atmosphäre, 6A–54
Belgium. Observatoire Royal de Bruxelles, 6A–64
Belousov, S. L., 6.1–171
Benioff, H., 6.1–147.
Benton, George S., 6.1–12
Berg, Hellmut, 6.1–141, 6.1–153
Bergeiro Hargain, José María, 6.1–170
Berger, G. L., 6.1–260
Berkaloff, E., 6.1–287
Berlage, Hendrick P., 6.1–138
Besterman, Theodore, 6A–8
Bibliografia Geofisica Italiana, 6A–87
Bibliographía Meteorológica Mexicana, 6A–90
Bibliografie van Meteorologiese Streek-literatuur, 6A–6
Bibliographia Oceanographica, Italy, 6A–14
Bibliographie Géographique Internationale, Paris, 6A–15
Bibliographie der aerologischen Literatur, 1929–1935, 6A–5
Bibliographie Météorologique Internationale, Paris, 6A–4
Bibliographie météorologique suisse, 6A–96
Bibliography of Agriculture, Wash., D. C., 6A–34
Bibliography of Scientific Publications of South Asia (India, Burma, Ceylon), 6A–118

LIST OF PERIODICALS

Note: This list contains the titles of the periodicals which regularly contain material on meteorology or related fields and it comprises only a small percentage of the periodicals from which pertinent articles are abstracted. The preferred form of title entry is given in bold face type.

PERIODICALS IN WHICH METEOROLOGICAL ARTICLES REGULARLY APPEAR

Académie des Sciences, Paris, Comptes Rendus.
Acta Geophysica Polonica, [Warsaw].
Akademiia Nauk SSSR, Izvestiia, Ser. Geogr. and **Ser. Geofiz.,** [Moscow].
American Geophysical Union, Transactions, National Research Council, Washington.
★**American Meteorological Society, Bulletin,** [Boston].
★**Angewandte Meteorologie,** [Potsdam].
Annales de Géophysique, Centre National de la Recherche Scientifique, [Paris].
★**Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A and Ser. B,** [Vienna].
Australian Journal of Physics, [Melbourne].
★**Australian Meteorological Journal,** [Melbourne].
Ciel et Terre, Société Belge d'Astronomie, Météorologie et Physique du Globe, [Brussels].
★**Geofisica e Meteorologia,** Società Italiana di Geofisica, [Genoa].
Geofisica Pura e Applicata, Istituto Geofisico Italiano, [Milan].
Geophysical Magazine, [Central Meteorological Observatory, Tokyo].
Hemel en Dampkring, [The Hague].
★**Időjárás,** Magyar Meteorólogiai Társaság and Országos Meteorológiai Intézet, [Budapest].
★**Indian Journal of Meteorology and Geophysics,** [Delhi].
★**Journal of Atmospheric and Terrestrial Physics,** [London].
Journal of Geophysical Research, [Washington].
★**Journal of Meteorological Research,** [Tokyo].
★**Journal of Meteorology,** American Meteorological Society, [Boston].
★**Journal Scientifique de la Météorologie,** Société Météorologique de France, [Paris].
★**The Marine Observer,** Air Ministry, Meteorological Office, London.
★**The Meteorological Magazine,** Air Ministry, Meteorological Office, London.
★**Meteorological Society of Japan, Journal,** Second Series, [Tokyo].
★**La Météorologie,** Société Météorologique de France, [Paris].
★**Meteorologische Rundschau,** [Bad-Kissingen].
★**Meteoros,** [Buenos Aires].
★**Monthly Weather Review,** U. S. Weather Bureau, Washington, D. C.
Nature, [London].
Polarforschung, Archiv für Polarforschung, [Kiel, Germany].
Przegląd Meteorologiczny i Hydrologiczny, [Warsaw].
Revista de Geofísica, Instituto Nacional de Geofísica, [Madrid].
★**Revista Meteorologica,** Junta Nacional de Meteorología, Montevideo.
★**Rivista di Meteorologia Aeronautica,** Associazione Culturale Aeronautica, [Rome].
★**Royal Meteorological Society, Quarterly Journal,** [London].
★**South Africa. Weather Bureau, Notos,** [Pretoria].
★**Tellus,** Svenska Geofysiska Föreningen, Stockholm.
Vsesoiuznoe Geograficheskoe Obshchestvo, SSSR, Izvestiia, [Moscow-Leningrad].
★**Weather,** Royal Meteorological Society, [London].
★**Weatherwise,** American Meteorological Society, [Boston].
★**Wetter und Leben,** Österreichische Gesellschaft für Meteorologie, [Vienna].
★**WMO Bulletin,** World Meteorological Organization, [Geneva].
★**Zeitschrift für Meteorologie,** Meteorologisches Observatorium, Potsdam.

★ Indicates those periodicals which are primarily meteorological.

TABLE OF CONTENTS

Meteorological Abstracts and Bibliography, Volume 6, Number 1, January 1955

Editorial ii
Foreword iii
Explanations iv

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

Textbooks 1
Review Articles and Major Works 3
General Meteorology 5
Meteorological Observations and Instruments 8
Methods of Observation 8
Observational Data 12
Instrument Carriers 15
Instruments 16
Synoptic Analysis and Forecasting 21
Cloud Seeding and Artificial Precipitation 26
Structure and Physics of the Atmosphere 27
Upper Atmosphere—Ionosphere 27
Mechanics and Thermodynamics of the Atmosphere 29
General Circulation 32
Atmospheric Disturbances 34
Radiation and Temperature 38
Radiation 38
Temperature 41
Soil Temperature 44
Sea Temperature 44
Pressure and Wind 45
Pressure 45
Turbulence 47
Wind 51
Special Winds 52
Wind Effects 53
Upper Air Winds and Vertical Motion 54
Aqueous Vapor, Hydrometeors and Hydrometeorology 55
Humidity and Evaporation 55
Condensation 57
Fog 59
Clouds 60
Precipitation 61
Rain 65
Hydrometeorology 66
Climatology and Bioclimatology 68
Climatology 68
Climate of Particular Places 69
Climatic Changes 71
Microclimatology 72
Climatic Classification 73
Bioclimatology 73
Environmental Influences 75
Synoptic Climatology 76
Miscellaneous 77
Cosmic Influences 77
Visibility 77
Optical Phenomena 78
Electrical Phenomena 79

PART II. ANNOTATED BIBLIOGRAPHY OF BIBLIOGRAPHIES ON METEOROLOGY

Introduction 82
Outline of Contents 82

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS 119

PART IV. AUTHOR AND SUBJECT INDEXES

Index of Authors 131
Index of Subjects 137
Index of Geographical Locations 144
List of Periodicals ..... Cover 3